

Children's Television Workshop Enter the World of Science and Technology

June 1986

3·2·1·contact®



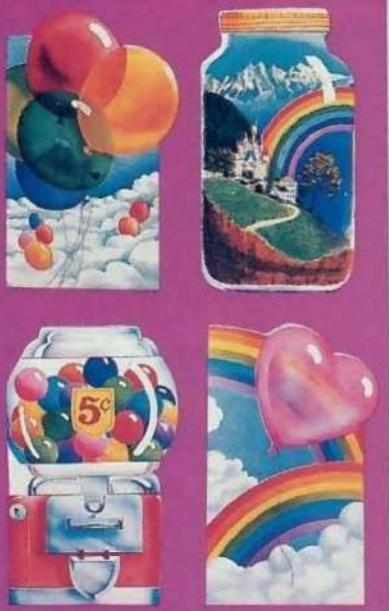
In Search of the Titanic

- Getting Rid of Garbage
- Strange and Weird Animals
- Famous Disasters
- ENTER Computer Section

Pineapple Kids Club

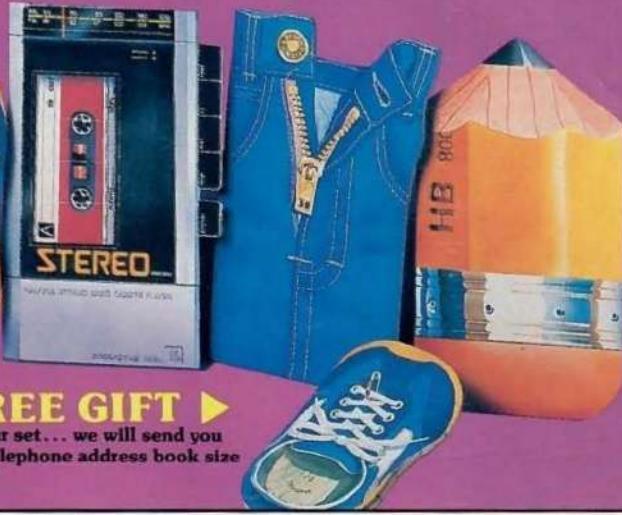
4 Notebooks \$4.00

4 designer note books diecut in a different shape. Each 48 page book is lined for easy writing and has a colorful front and back design. Great for school, at home, or to take anywhere. 2 series to choose from. Size 4-1/2 x 8" ea.



Series 2: Gum, Heart,
Jar, Balloons

Series 1: Shoe, Cassette,
Jeans, Pencil



FREE GIFT ▶

To complete your set... we will send you
one matching telephone address book size
3-3/4" x 5-1/2"

400 Stickers \$4.00

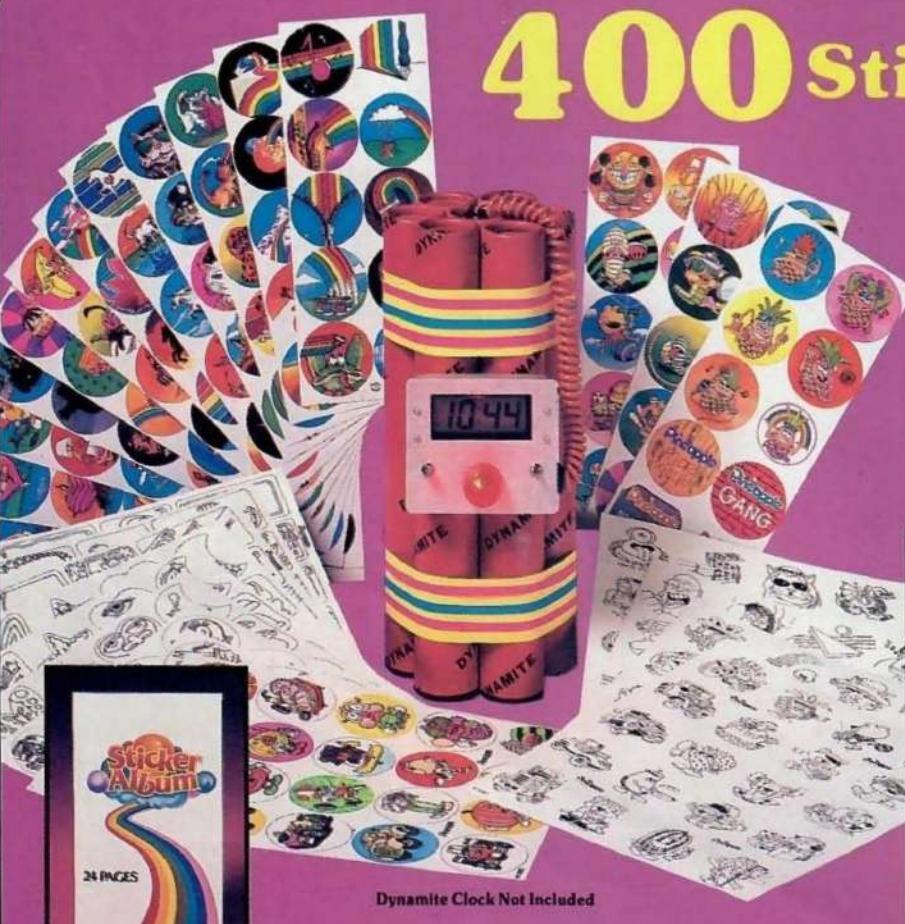
"Hey kids! Stickers! Stickers! and more Stickers!"
Collect them - trade them - color them.

"Here's What You Get"

- 150 full color stickers including, hearts, rainbows, unicorns and many many more
- 250 color-your-own stickers in assorted circles, shapes, and labels.

PLUS FREE...

with every 400 stickers you will receive a 24 page Pineapple Sticker Album size 4" x 8".



Dynamite Clock Not Included

◀ **FREE GIFT**

SEND TO: PINEAPPLE KIDS CLUB
P.O. BOX 69, BUFFALO, N.Y., 14222

PLEASE PRINT NAME _____

ADDRESS _____

CITY _____ AGE _____

STATE _____ ZIP QTY TOTAL

Series 1: Shoe, Cassette, Jeans, Pencil (\$4.00) x _____ = _____

Series 2: Gum, Heart, Jar, Balloons (\$4.00) x _____ = _____

400 Stickers And Album (\$4.00) x _____ = _____

POSTAGE AND HANDLING ADD \$1.00 PER KIT (\$1.00) x _____ = _____

NEW YORK STATE RESIDENTS ADD 8% SALES TAX = _____

CANADIAN ORDERS PAYABLE IN US FUNDS PLUS ADD \$1.00 EXTRA = _____

TOTAL = _____

PLEASE SEND CHECK OR MONEY ORDER
EXPIRY DATE DEC. 31, 1987

A	1 -	2 -	17 -	D	S 21G
---	-----	-----	------	---	-------

3·2·1·Contact®

Publisher
Nina B. Link
Editor
Jonathan Rosenbloom
Art Director
Al Nagy
Senior Editor
Richard Chevat
Managing Editor
Aura Marrero
Associate Editor
Russell Miller
Assistant Editor
Ellen Rudolph Mednick
Assistant Art Director
Jo Lynn Crabs

RESEARCH
Research Director/Publications
Dr. Istar Schwager
Field Research Coordinator
Andrés Henriquez

BUSINESS
Vice President/General Manager
Bill Hitzig
Business Manager
Julie K. Andersen
Subscription Fulfillment Manager
Lucille Friedman
Promotion Manager
Elizabeth McNamara
Production Director
Carlos N. Crosbie
Production Manager
Kathy Lee

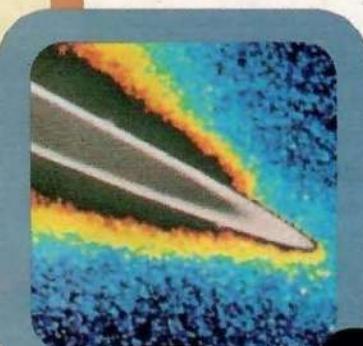
ADVERTISING SALES
Advertising Director/Magazine Group
Al DiGuido
Advertising Representatives
Gail DeLoft
Sara Montefiore
Advertising Coordinator
Nancy C. Stewart

ADVISORS
Dr. Gerald S. Lesser
Professor, Harvard Graduate School of Education
Dr. Charles Walcott
Director, Lab. of Ornithology, Cornell University
Dr. Jearl Walker
Professor of Physics, Cleveland State University
Dr. Charles A. Whitney
Professor of Astronomy, Harvard University

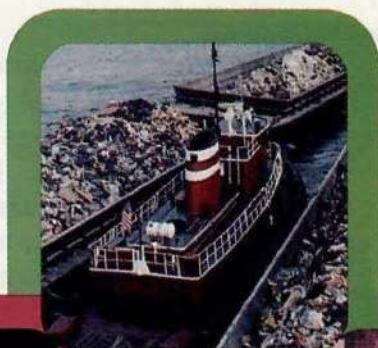
ADVERTISING SALES OFFICE
Al DiGuido
Advertising Director
3-2-1 Contact Magazine
1 Lincoln Plaza
New York, NY 10023
(212) 595-3456

Applied for membership, Audit Bureau of Circulations.

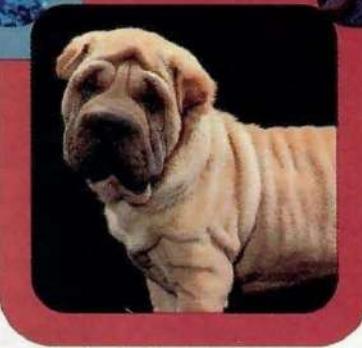
3-2-1 Contact (ISSN 0195-4105) is a publication of the Children's Television Workshop, published ten times during the year, monthly except for February and August. © 1986 Children's Television Workshop. All rights reserved. All contents owned by the Children's Television Workshop and may not be reprinted without permission. 3-2-1 Contact is a trademark and a service mark of the Children's Television Workshop. Printed in the U.S.A. Number 67, June 1986. Editorial offices, One Lincoln Plaza, New York, N.Y. 10023. Application to mail at second-class postage rates is pending at New York City and additional mailing offices. Send subscription orders to 3-2-1 Contact, P.O. Box 2933, Boulder, CO 80322. POSTMASTER: Send address changes to: 3-2-1 Contact, P.O. Box 2933, Boulder, CO 80322 (including label from cover of magazine). Subscriptions: 1 year U.S.A. \$11.95; Canada and other countries add \$6. Bulk copy rates to schools and other institutions available on request.



Page 10



Page 32



Page 2



Page 16

Featuring This Month

- 4** The Search for the Titanic: Robot Submarines Find a Long-Lost Ship
- 8** Famous Disasters
- 10** What Is It? A Camouflage Quiz
- 16** Tons and Tons of Trash: Getting Rid of Our Garbage Is a Big Problem
- 20** Buried Treasure: A Game
- 40** Experiment: Rehash Your Trash

ENTER: The High-Tech World of Computers

- 31** Word Hunt
- 32** Newsbeat
- 33** The Slipped Disk Show
- 34** Reviews
- 36** Basic Training
- 38** Pixel Puzzler

Plus Our Regular Departments

- 2** TNT: Tomorrow's News Today
- 14** Factoids
- 22** The Bloodhound Gang
- 26** Any Questions?
- 28** Extra!
- 30** Contact Lens
- 41** Did It!

Cover Illustration © Dennis Ziemienski



ILLUSTRATION BY JENNIFER SKOPP

I'm Not Really Here!

Imagine yourself chatting by the Eiffel Tower in Paris. Maybe you can't be there for real—but you can be there on a videogram.

Videograms are the latest way to say "hey" to friends. They are videos you can record in booths at some amusement parks and shopping malls. You tape your message. The booth mixes in a pre-taped background. The result: A video cassette of you in an exotic spot, such as Rome's Colosseum or New York's Times Square.

"We're giving people the opportunity to be someplace they're actually not," says Dennis Fountaine, inventor of the videogram booth.

Oh, Skip It!

Fat stones sink, rough stones don't spin properly. Anyone who's ever skipped a stone across a pond knows what it's like to search for the right round, flat stone. Now, a Tacoma, WA, inventor says he's created the perfect skipping stone.

It wasn't easy. John Zehr made about 50 different versions

before he came up with the right design. And whatever made that stone so good happened by mistake. John used a computer to figure out how to repeat the mistake and make perfect stones.

John's stone easily skips 30 times or more. The official world record is only 24, but that's with a natural stone. (The people who run the world competition don't allow artificial stones.)

John doesn't only skip his stones. He sells them, too. People sometimes ask him why they should pay money for something they're just going to throw away.

"You wouldn't believe just how far you can throw it away," John told CONTACT.

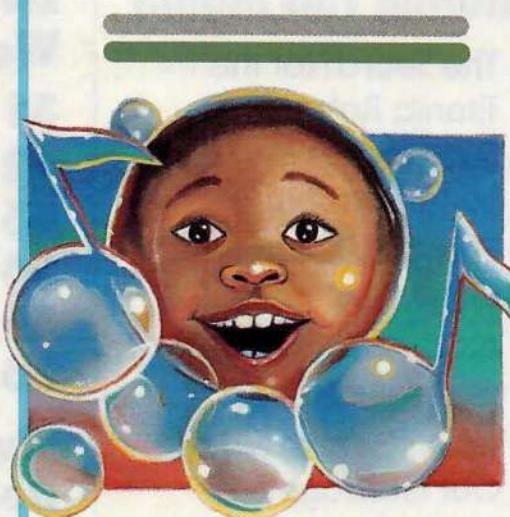
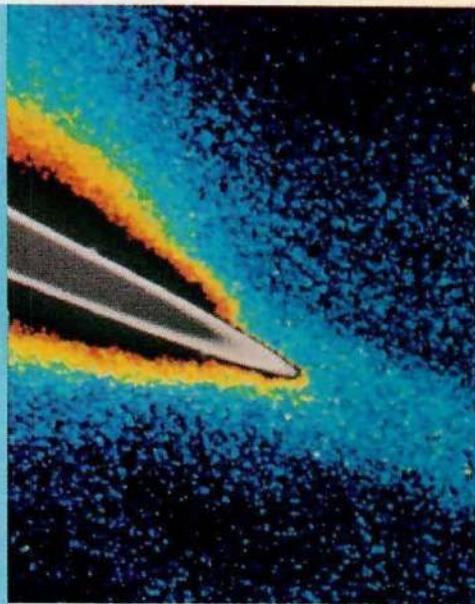


PHOTO COURTESY MARK SHOWALTER/NASA/AMES

Singin' in The Bathtub

"Splish, splash, I was takin' a bath"—that's the old song. Now you can splish and splash along with the song in a new stereo-telephone-bathtub.

It's dangerous to bring a phone or stereo into a wet place. But this contraption keeps electricity and water safely apart. Count on making your own bath music for now, though—this nifty tub costs \$12,000.



Look Again

Sometimes it pays to take another look. That's how scientists discovered a 600-mile thick ring of dust circling the planet Jupiter.

Astronomers have long known about two of Jupiter's rings. They found this new ring while taking one more look at a photo taken by Voyager 2, the exploring spacecraft. The photo is seven years old, but until now no one noticed the ring.

TV Tunes

Rock videos turn records into mini-TV shows. Now TV is returning the favor—turning TV theme songs into two hot record albums.

They're called Television's Greatest Hits. Most of the hits come from the 1950's and 1960's. But kids can sing along with old favorites like Popeye, The Flintstones, and Star Trek. (Sorry, they left off the 3-2-1 Contact theme!)

Hot Rock

Someday, your home may be heated by the center of the Earth.

The Earth is filled with "magma"—rock so hot it's melted into liquid. The U.S. Department of Energy wants to turn that heat into usable power.

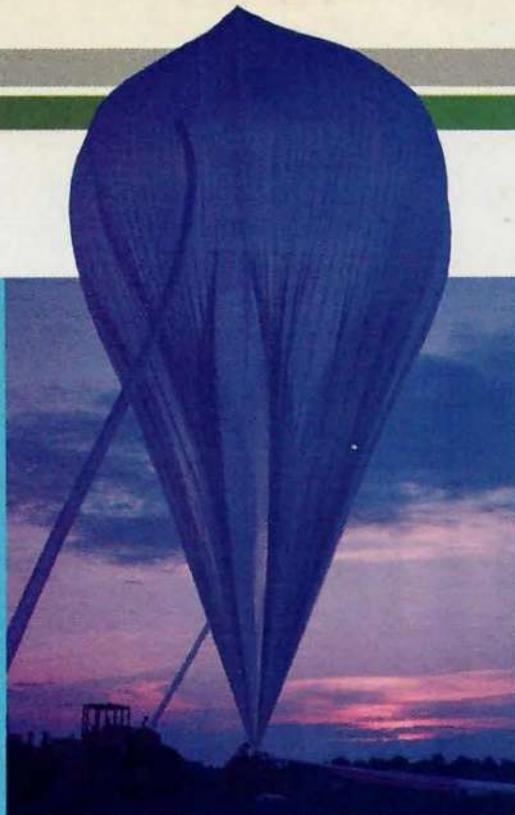
Pools of magma as hot as 2,000 degrees Fahrenheit lie about three miles under parts of California. Researchers plan to drill down to the pools, then pump water down the deep shaft.

The water will boil into hot steam as soon as it reaches the magma. The steam will rush up the shaft to drive an electric generator at the top. Presto! Power from deep within the Earth!

Scientists say there's enough energy under the U.S. to keep the country warm and bright for 800 years.



PHOTO COURTESY NATIONAL CENTER FOR ATMOSPHERIC RESEARCH



Up, Up and Away

Balloons are kid stuff, right? Don't tell that to the scientists who use them to float experiments far above the Earth's surface.

Incredibly small bits of matter are always shooting toward Earth from the farthest reaches of outer space. Few ever reach the surface. They're blocked by the gases in the atmosphere.

These atoms may carry clues about how the universe was created and what it's made of. So scientists use balloons to carry experiments up to meet the invisible objects.

Not just any balloons, though. These high-flyers are as big as football fields. Uninflated, they weigh up to 4,000 pounds each. They can carry 10,000 pounds of equipment. Filled with helium, floating 25 miles high, they look like gigantic puffed-up trash bags.

The flights last eight to twelve hours, then a built-in explosive pops the balloon. A parachute opens, and the cargo glides safely back to Earth so scientists can study the findings.

ILLUSTRATION BY JOLLYN CRABS

Talking Turkey

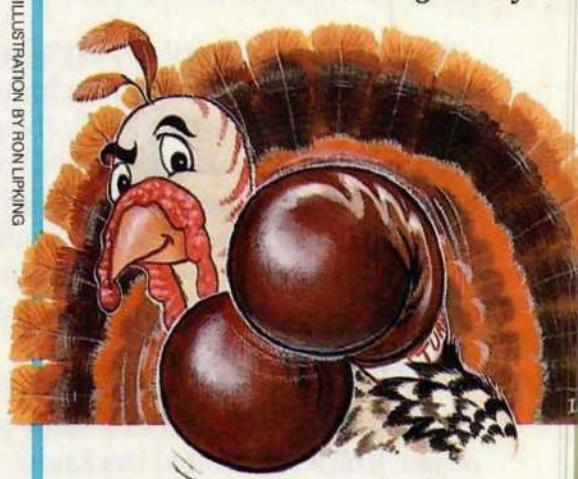
What's big and tough, lives in every state but Alaska and goes "gobble, gobble"? It's a wild, wild turkey.

About 80 years ago, there were few wild turkeys left in the U.S. So states began to protect them and cut back turkey-hunting.

Over the years, turkeys learned to eat almost anything. They learned to hide from hunters. They survived in deserts and in snow. And they bounced back.

"They can co-exist with man just about anywhere," Dr. James Earl Kennamer, a wild turkey expert, told CONTACT.

Even big city parks. So if you find a three-foot-tall turkey by your ball field, don't be surprised. Just say, "Congratulations, Tom." That's talking turkey.



So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science stories that have to do with the future. (Be sure to tell us where you got your stories.) Send to:

TNT/3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, NY 10023

The Search for the Titanic

by B.V. Shaw

ROBOT SUBS FIND A LONG-LOST SHIP

On the night of April 14, 1912, in the cold waters of the North Atlantic, a luxury ocean liner struck an iceberg. Slowly the giant ship began to sink. Passengers rushed to the lifeboats, but there wasn't enough room! Only 705 out of 2,200 on board lived. Two hours after hitting the iceberg, the ship passed beneath the surface of the waves and disappeared. The mighty Titanic had sunk.

Seventy-three years later, in September 1985, a different ship crossed that same piece of ocean. The ship, named the Knorr, seemed to drift with the waves. But the Knorr wasn't drifting—it was searching for something.

In a darkened room on board, seven researchers sat at their posts, keeping watch. They weren't watching the sky or the waves. They were watching the ocean floor, 13,000 feet below them! How? Far beneath the Knorr floated a very special robot system of cameras and lights called the Argo. The cameras were sending back a video picture of the ocean bottom.

Stu Harris was one of those researchers. He

had already been watching for eight days. So far he had seen nothing but mud and rocks. But suddenly some junk appeared on the screen.

"All of a sudden," Stu told CONTACT, "There was something that looked like a pipe, then a square object lying on the bottom. Finally we drove over the top of a boiler, and we knew we'd found what we were looking for—the Titanic!"

The Unsinkable Titanic

The Titanic was called unsinkable. When it was built, it was the biggest ship in the world. But the Titanic never made it across the ocean. It sank on its very first voyage from England to New York.

Ever since, people have dreamed of finding the Titanic, and possibly bringing her up again from the ocean floor. Everyone knew the general area where the Titanic sank, but until now, no one had the equipment to find her. Getting a photograph of the ocean floor is not as easy as it might sound. You don't just send down a waterproof camera and a flash.

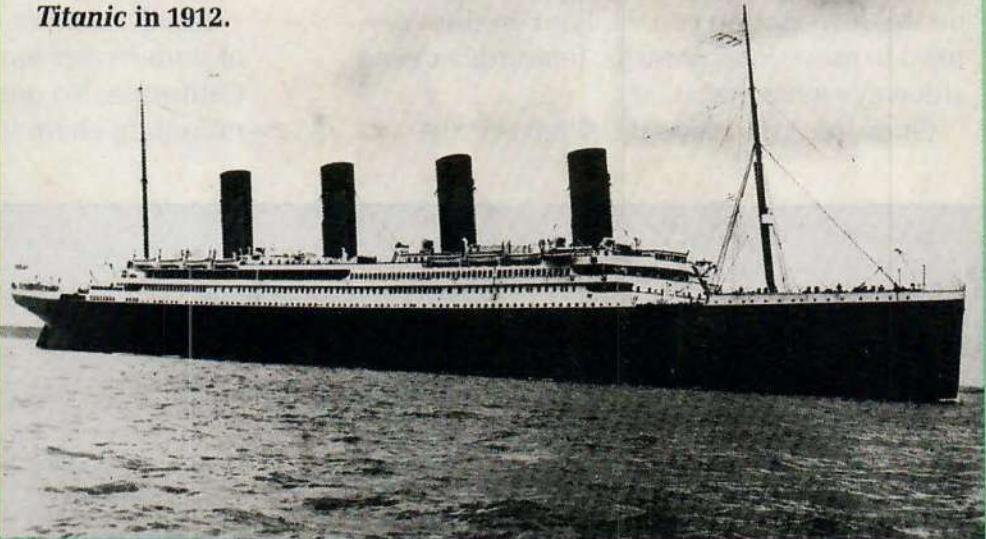
"Looking through water at great depths is like



PHOTOS COURTESY WOODS HOLE OCEANOGRAPHIC INSTITUTION

Above: The Argo robot system that found the *Titanic*.

A photo of the *Titanic* in 1912.



Below: Part of the wreck of the *Titanic*, 13,000 feet below the surface.



looking through a fog. The dust and dirt reflect any light," Stu told CONTACT. "It seems like the water glows."

The problem was so bad that the U.S. Navy thought it was impossible to use any kind of photography to search for objects at that depth. They were convinced that the best way was to use sonar, or sound waves. But Stu Harris and other engineers had another idea. They worked at the Woods Hole Oceanographic Institute on Cape Cod, MA. There they developed the Argo.

"Imagine you're driving in a car at night in a fog," Stu explains. "If you put on your high beams, the fog really seems to glow and it's harder to see. That's because the high beams are at the same angle to the fog

as your eyes. The light bounces straight back at you and makes it hard to see.

"But the low beams on a car are at a different angle to the fog than your eyes. So the light is not reflected directly back at you. Less reflection makes it easier to see. Now suppose your headlights were out in front of the car, shining straight down. You'd reduce the reflection from the fog even more. And that's exactly what we do with the Argo."

Stu and his team developed a system that makes it possible to photograph or →

videotape a very large area in very deep water. They use powerful lights to light the area from above the cameras. One flash from the Argo's lights is equal to a 300,000 watt bulb.

Argo, Angus and Jason

According to Stu Harris, the Argo dangles on the end of a long cable. It has no engines of its own, but is towed along by the research ship. The Argo has its own sonar that can send its position back to the main ship. That helps the captain stay on course.

The scientists on the Knorr knew the general area where the Titanic went down. To find its exact location, they slowly pulled Argo back and forth over the area, like a person mowing a lawn. Information sent back from the Argo's navigation system went into a computer on the ship, keeping track of where the Argo had been.

The controls of the Knorr look like a pair of joysticks. With those, the captain keeps the ship on its slow-motion course. Four engines are used to move it backwards, forwards or even sideways when necessary.

Once the Argo made its discovery, the

researchers sent down "Angus," another unmanned camera system that takes still photographs. These stills are much clearer than the fuzzy videotaped pictures sent up by the Argo. The pictures were so sharp that small details of the wreck were easily seen, such as dinner plates and pieces of luggage.

In Greek mythology, Argo was the ship that carried Jason and the Argonauts to search for the Golden Fleece. In the near future, Woods Hole's Argo will also carry a Jason.

But this Jason is a robot that looks a little like a beach ball. It will be able to leave Argo and move in for a closer look at whatever Argo is investigating. Jason will also be able to collect samples with mechanical claws.

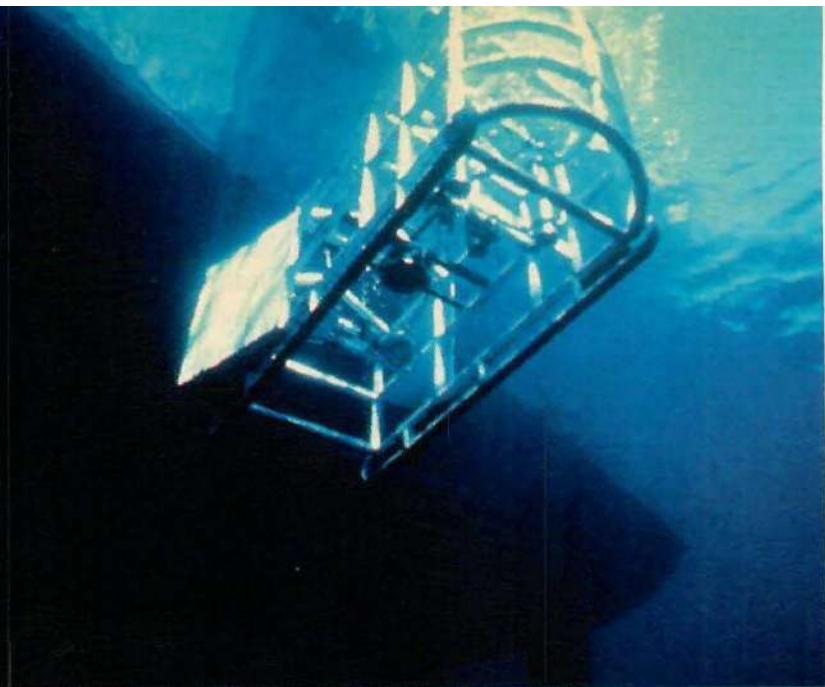
An Undersea Memorial

One day the Argo may go back to snap more photos of the Titanic. Meanwhile it has lots of other work to do, exploring the world's oceans.

Last December, it was used to explore a ridge of underwater mountains just south of Baja, California. No one knew what that undersea mountain chain looked like until the Argo



In this photo, you can see details of the *Titanic's* deck.



PHOTOS COURTESY WOODS HOLE OCEANOGRAPHIC INSTITUTION

photographed it. And the Argo is also being used to try to get the first pictures of an undersea volcano in action.

Now that the Titanic has been found, what will happen to it? Woods Hole and the U.S. Navy, which sponsored the search, are keeping the exact location of the wreck a secret. That's to prevent treasure hunters from trying to bring up bits and pieces of the Titanic. Bob Ballard, the leader of the research team, hopes the U.S. Congress will pass a law making the wreck a memorial to the 1,500 people who died on the Titanic.

But whatever happens, the mystery of the lost Titanic is solved—thanks to the Argo. **□**

Above: The Angus begins a trip to the ocean floor.



Above: The Knorr, research vessel and home of Argo and Angus.

Left: A drawing of Argo being towed underwater.

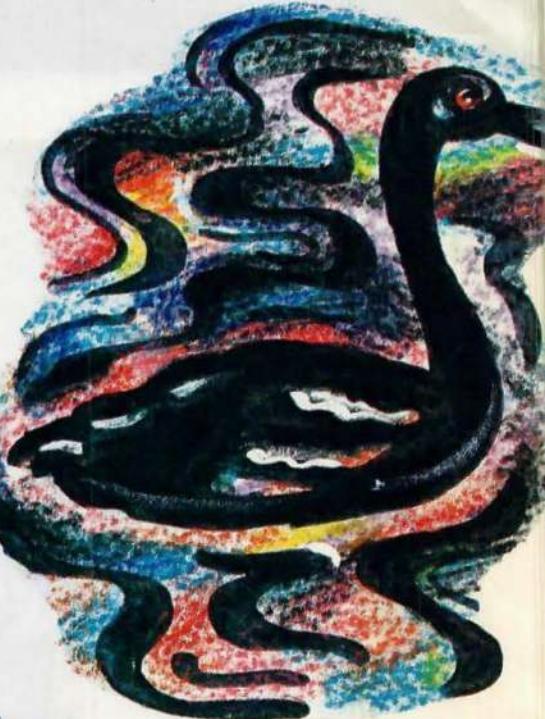


ILLUSTRATION BY STEFAN MASSE

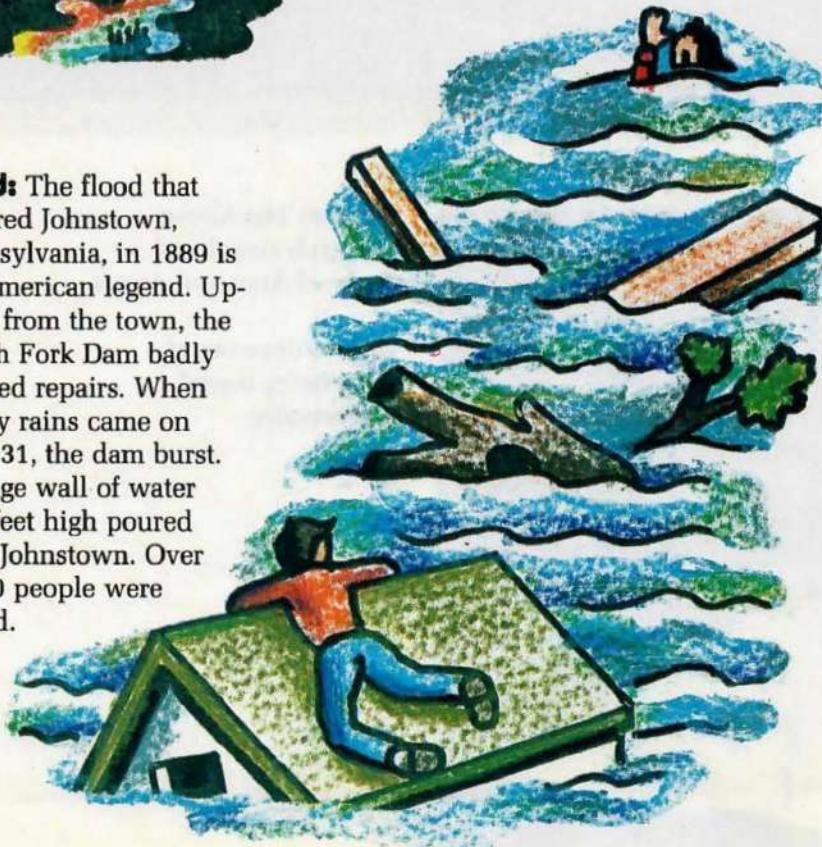
Famous Disasters



Air Crash: The biggest blimp ever made was the Hindenburg. Built in 1936, it was almost three football fields long! Hydrogen gas in the blimp made it float. But this gas caught fire while the ship was landing in New Jersey. The Hindenburg exploded. Since then, blimps have been filled with helium gas, which does not burn.

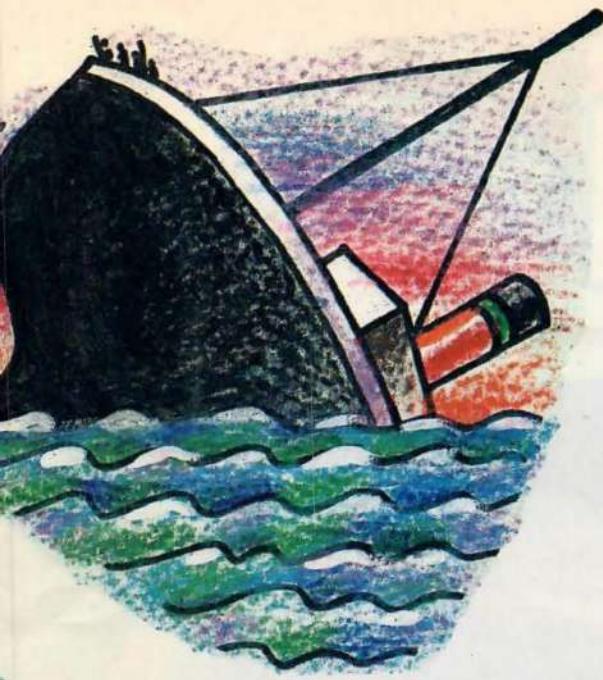


Flood: The flood that covered Johnstown, Pennsylvania, in 1889 is an American legend. Up-river from the town, the South Fork Dam badly needed repairs. When heavy rains came on May 31, the dam burst. A huge wall of water 125 feet high poured over Johnstown. Over 2,000 people were killed.



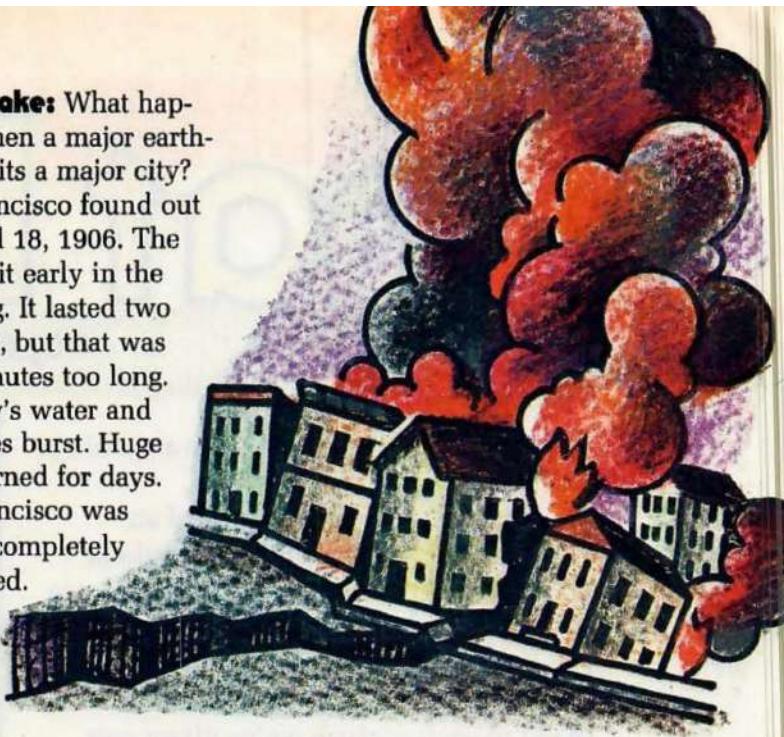
Ship: Thirty years ago, in June 1956, the Andrea Doria sank after a crash off the New England coast. Treasure hunters salvaged its safe in 1981 and thought they'd found a fortune—but all that was in it was soggy old paper.

Volcano: On the island of Krakatoa in 1883 a volcano erupted. The explosion was so loud that people could hear it 3,000 miles away! The sky above Krakatoa was black. Lava poured out of the mountain for days. Finally the island collapsed. Most of it disappeared into the Pacific Ocean.

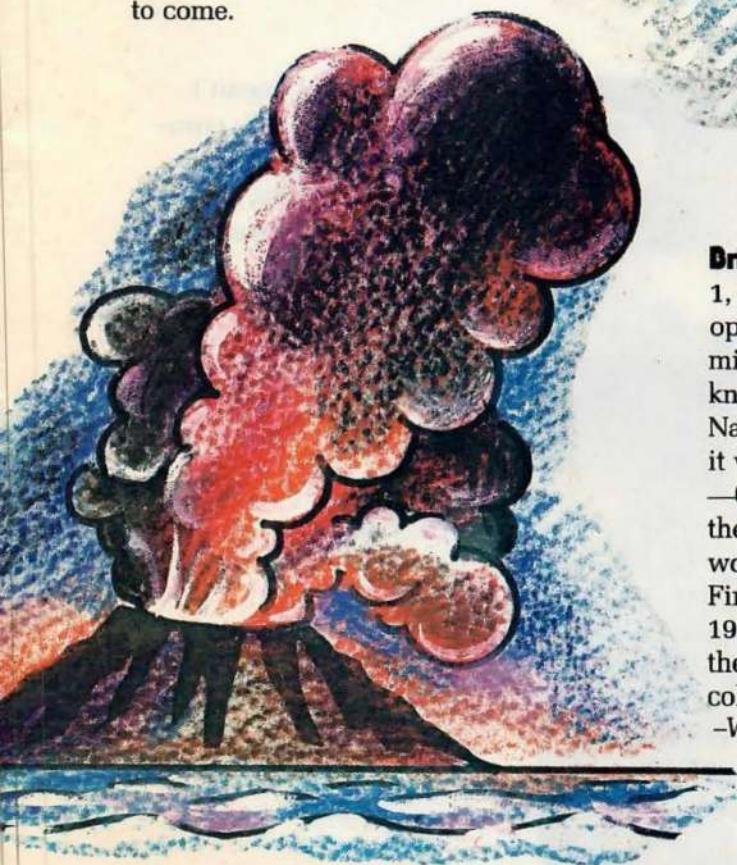


Oil Spill: The worst oil spill so far came from an oil well in the Gulf of Mexico. On June 3, 1979, the well began oozing oil into the water. Out gushed 4,500 tons of oil a day. It sent an oil slick 70 miles long floating towards Texas. Ecologists say that plants and animal life there will be affected for years to come.

Earthquake: What happens when a major earthquake hits a major city? San Francisco found out on April 18, 1906. The quake hit early in the morning. It lasted two minutes, but that was two minutes too long. The city's water and gas pipes burst. Huge fires burned for days. San Francisco was almost completely destroyed.

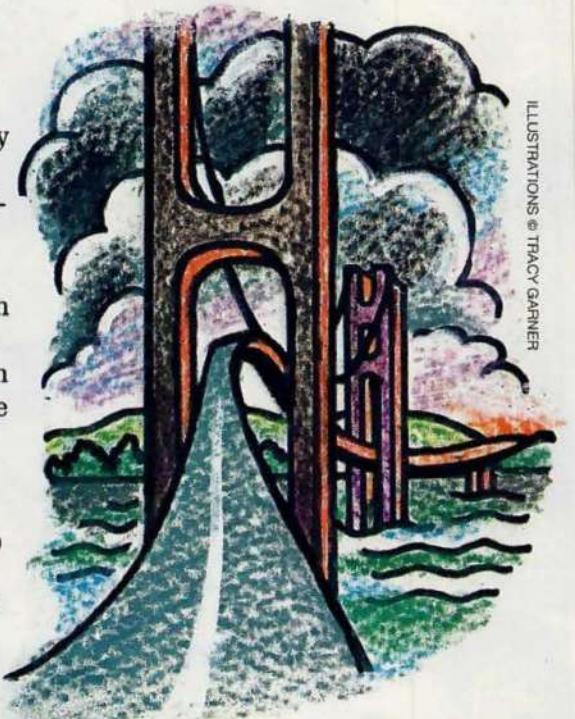


Snowstorm: The "Blizzard of 1888" is one of the most famous snowstorms of all time. It dumped 30 inches of snow and ice on the northeast United States. There were no giant snow plows in 1888. Cities and towns were helpless for weeks. Before the snow melted, more than 400 people died.



Bridge Collapse: On July 1, 1940, a new bridge opened. At first this half-mile-long bridge was known as the Tacoma Narrows Bridge. But soon it was given a nickname — Galloping Gertie. When the wind blew, the bridge would twist and curve. Finally, on November 7, 1940, Gertie fell. It was the biggest bridge ever to collapse.

—Written by Ellen Weiss



What Is It?

A CAMOUFLAGE QUIZ

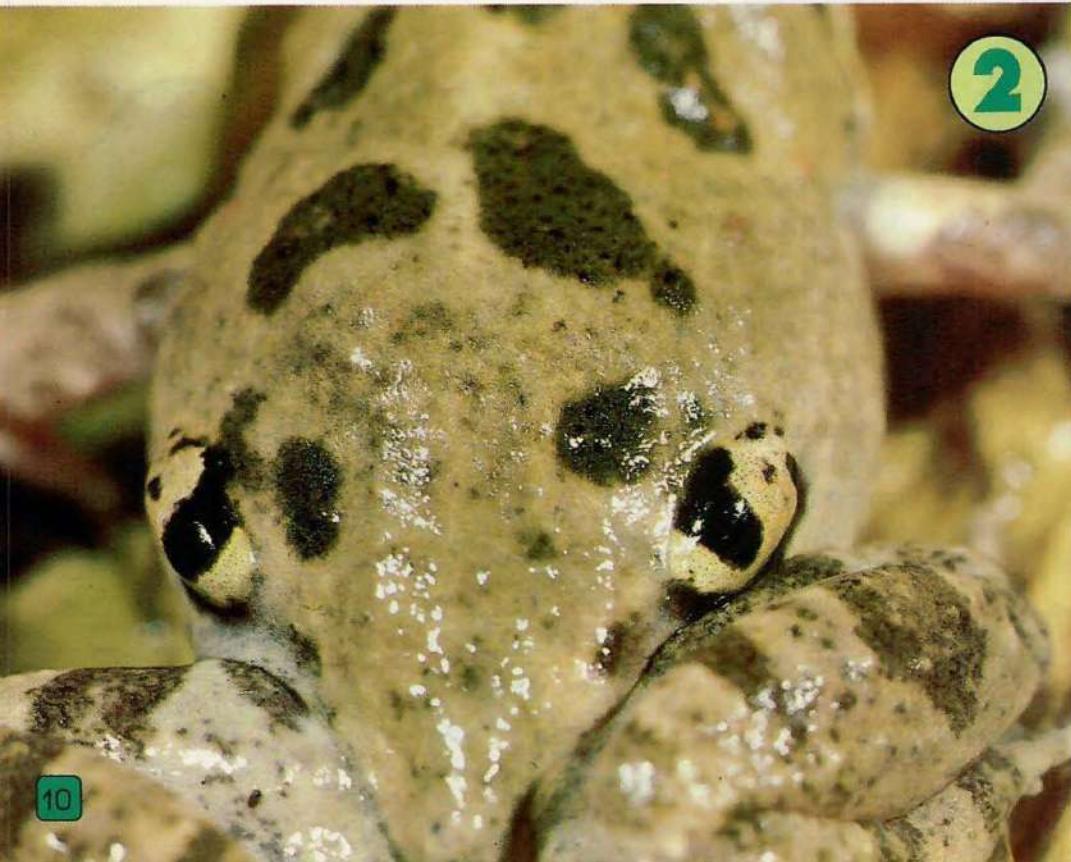
by Richard Chevallier

Can you name—or find—the animals in this creature quiz?

There is an animal (or a part of an animal) in each of the pictures on these two pages. Can you name them? Some are hidden. Others are out in the open. But even if you can see the critter in question, you still have to figure out what it is.

Next to each picture we've given you some hints. When you're done eyeballing each animal, turn the page to get a better look—and the answers.

You'll need sharp eyes to figure out what this is a picture of. It's not a puddle, and it's not a poodle either.



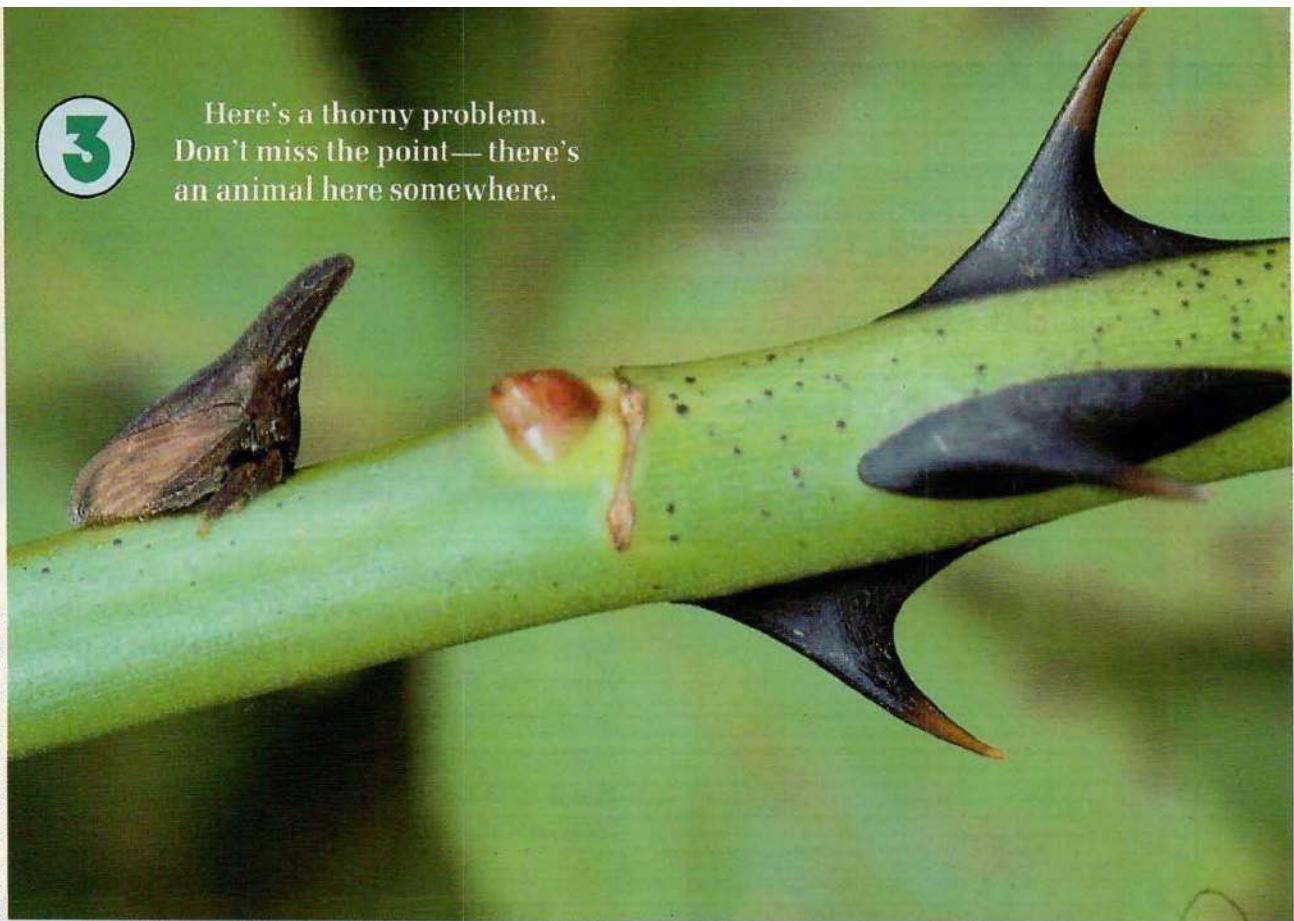
This animal doesn't seem to know if it's coming or going. No matter how hard you try, you won't be seeing eye-to-eye with it.

PHOTO: ANIMALS ANIMALS/ZIG LESZCZYNSKI

3

Here's a thorny problem.
Don't miss the point—there's
an animal here somewhere.

PHOTO © ANIMALS ANIMALS/BRECK KENT



4

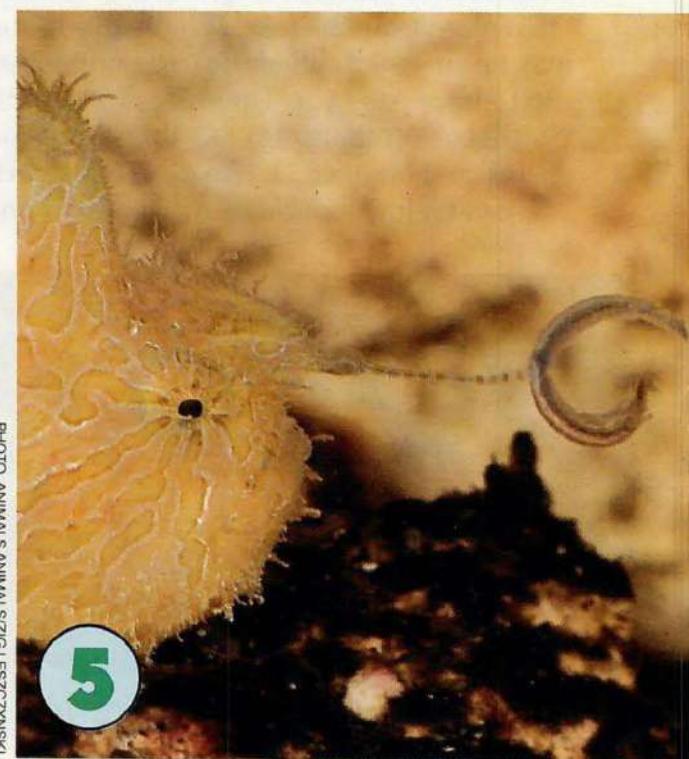
See if you can weed out the creature in
this picture. If you can't find this one, then
you're all wet.

PHOTO, ANIMALS ANIMALS/ZIG LESZCZYNSKI



5

There's a catch to this creature.
Try looking at it from a different
angle. But don't stare at it too long,
you might get hooked.



What Is It? Answers

You need sharp eyes to see a Sharpei when it's lying down. Sharpeis were first bred in southern China about 2,000 years ago. They were used by peasants for hunting and for fighting other dogs.

The rolls of skin help protect it from other animals' bites.

1



PHOTO: ANIMALS ANIMALS © JAYNE LANGDON

PHOTO: ANIMALS ANIMALS/ZIG LESZCZYNSKI

2



You can see eye-to-eye with this creature, but only if you turn it around. This is the false-eyed frog, which is found in the rain forests of South America. The two fake "eyes" on its back may help confuse other animals that eat frogs. The frog eaters may have trouble figuring out which end of the frog is the front. This probably helps keep the frog from becoming a meal.

3



PHOTO: © ANIMALS ANIMALS/RICHARD KOLAR

PHOTO: ANIMALS ANIMALS/ZIG LESZCZYNSKI

4



The catch here is not to get caught by the anglerfish. There are several kinds of fish like this in tropical seas around the world. This one lives in the Caribbean. All anglerfish have fins or other parts of their bodies that look like fish food. When a smaller fish swims too close to the "worm," the anglerfish is the one who gets a meal.

5

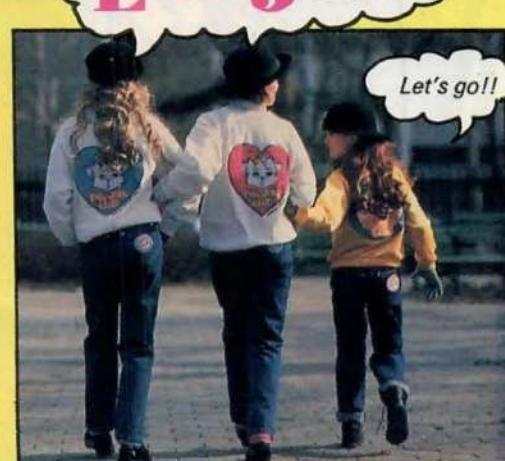
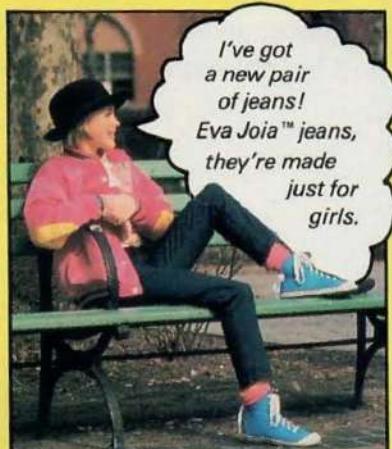


PHOTO: ANIMALS ANIMALS/ZIG LESZCZYNSKI

Just For Girls



EVA JOIA INCORPORATED © 1986

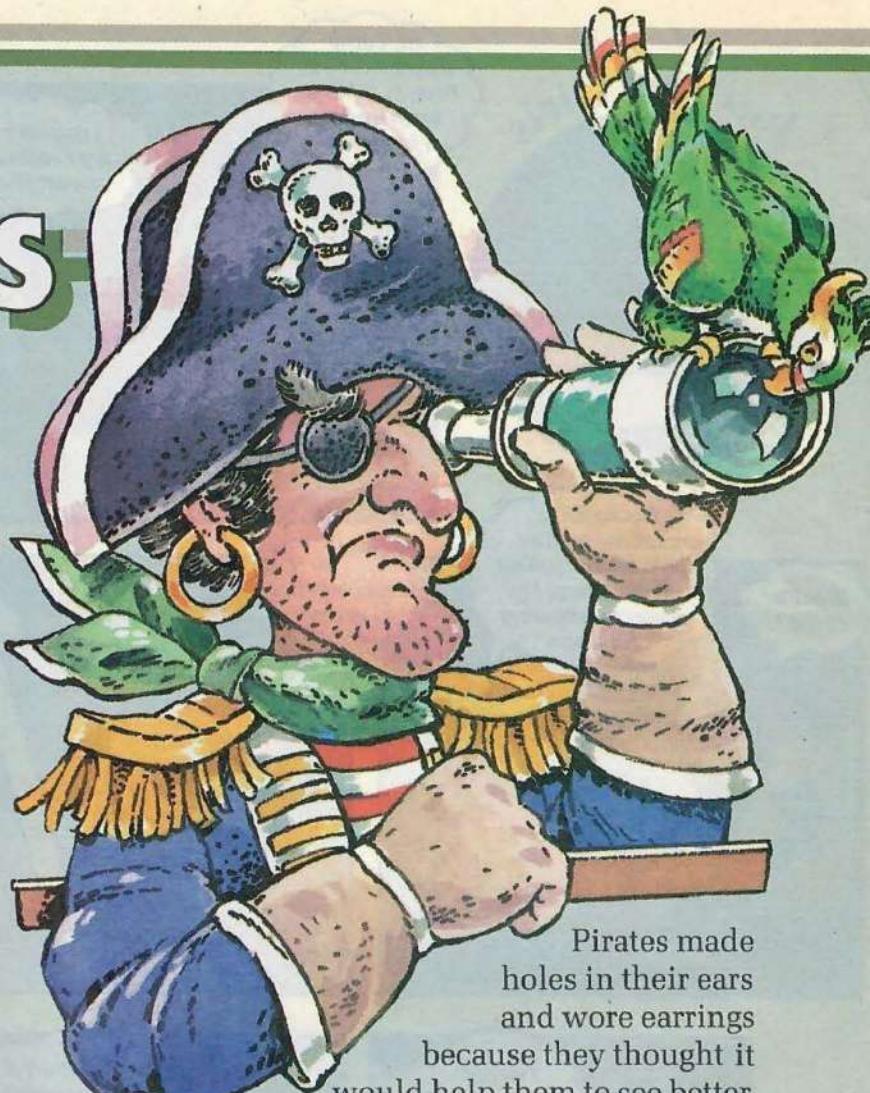
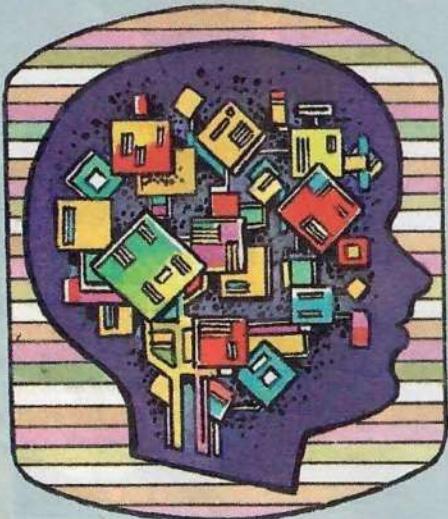


to be continued.

Look for Eva Joia jeans at your favorite store.

Factoids

In a lifetime,
the brain will store
100 trillion
($100,000,000,000,000$)
bits of information.



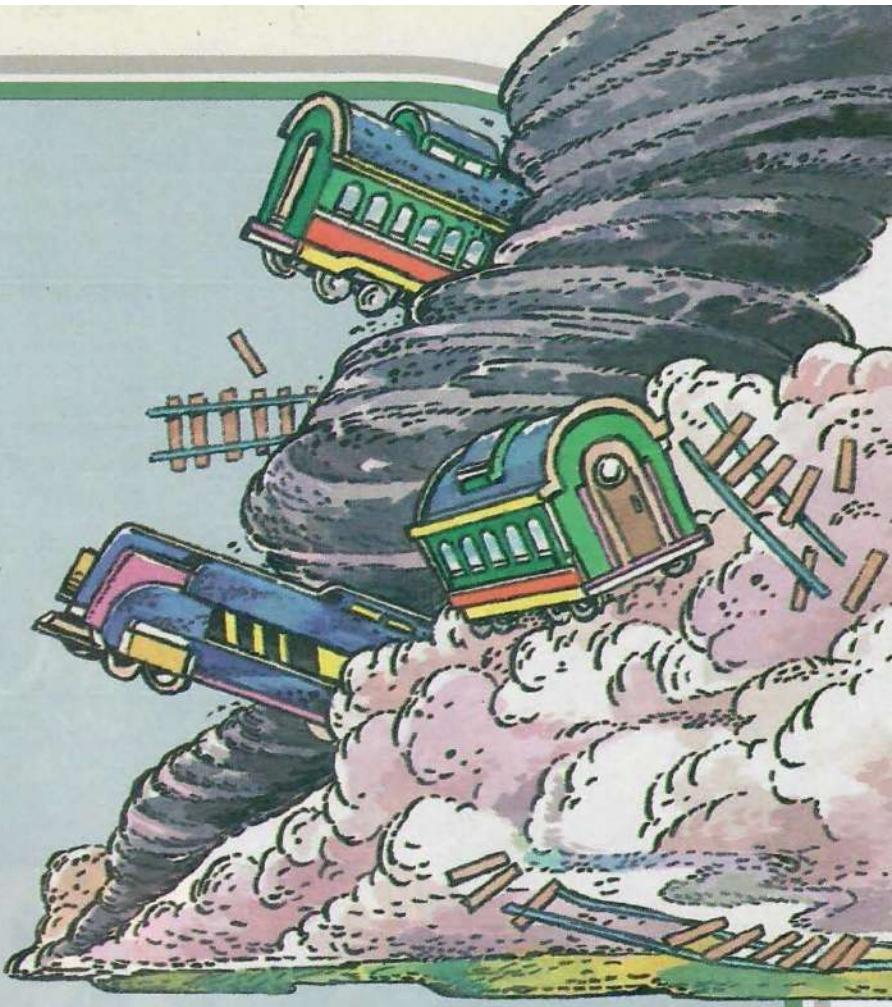
Pirates made holes in their ears and wore earrings because they thought it would help them to see better.



A butterfly's tastebuds are in its feet.



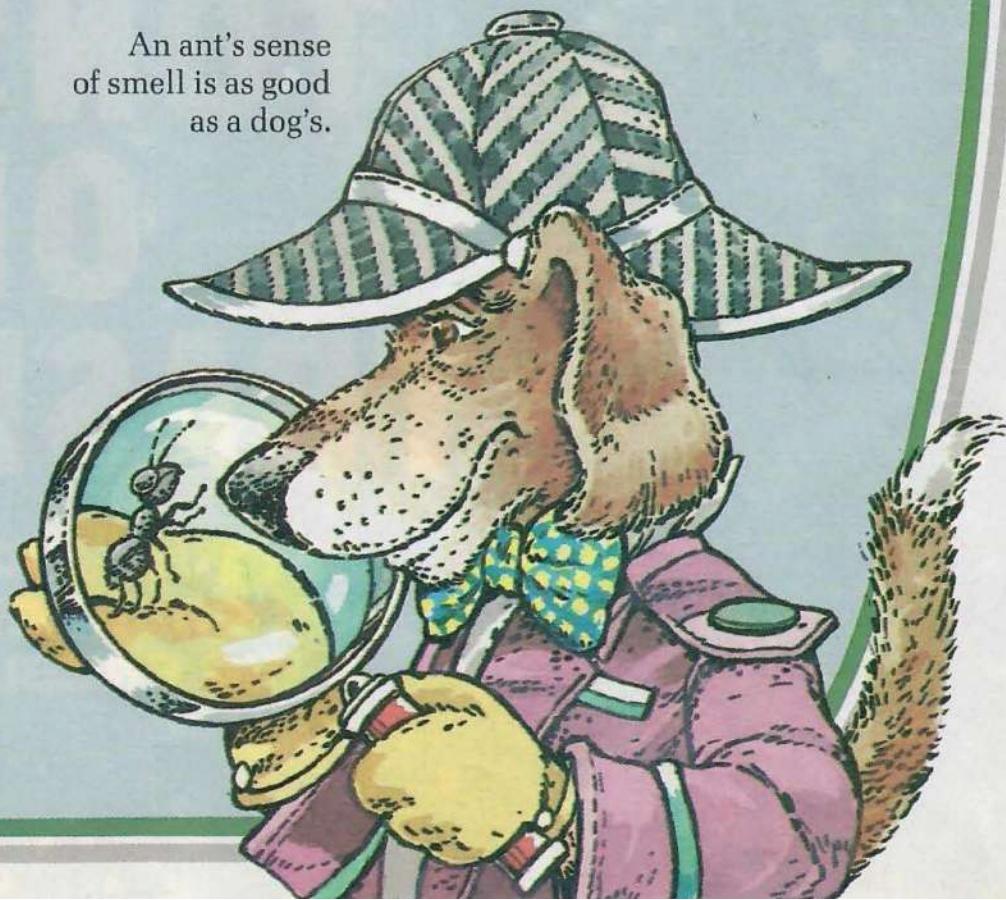
If your hair could
be made into a rope,
it could lift a
medium-sized car.
It's that strong!



In 1931, a tornado in Minnesota
lifted an 83-ton railroad train with 117
passengers—and carried it for 80 feet.

An ant's sense
of smell is as good
as a dog's.

The average American
gets between one and six
colds a year.





TONS AND TONS OF TRASH

by Elizabeth Hettich

GETTING RID OF
OUR GARBAGE IS
A BIG PROBLEM



Hold it! Before you throw out that piece of paper or that pop bottle, think about this: Every day, the average American throws away $3\frac{1}{2}$ pounds of garbage. That might not sound like a lot, but think about this: Over one year that adds up to 1,278 pounds of trash—and that's just for one person!

Think that's a lot? Americans produce 7 billion tons of garbage a year. That's enough to cover the entire U.S. a few feet deep in just a few years.

What happens to all of that trash? Getting rid of it is a serious problem that grows bigger every day. And only recently have scientists begun to work on cleaner, safer ways to do this.

"Garbage is often ignored as something that's too unpleasant to think about," George Wilson, a scientist with the U.S. Department of Agriculture told CONTACT. "But getting rid of garbage is something we have to be concerned about."

Taking Out The Trash

Did you ever wonder what happens to your trash after the garbage truck hauls it away? A lot of it used to be dumped into the ocean or burned. That caused some serious pollution.

Today, about 90 percent of the garbage in the



PHOTO: CONTACT PRESS IMAGES/© LOUIE PSHOVOS

These barges are taking garbage to be dumped at the Fresh Kills landfill in New York City.

United States is buried in areas called landfills. The biggest landfill in the U.S. is in New York City, at a place called Fresh Kills. Twenty thousand tons of garbage are dumped there every year. That's more than 44 million plastic trash bags filled to the top. This heap, which covers 3,000 acres, gets a foot taller every month.

Once a landfill is full, workers cover it with several feet of soil. Then it may be turned into a park or golf course. Burying all that garbage and turning it into a park may sound like a great idea. But there are a lot of problems that go along with landfills.

One of the biggest is water pollution. For instance, at the Fresh Kills landfill, 4 million tons of waste seeps into the waterways of New York every year.

"Landfills can pollute our waterways and ground water," says Ron Albrecht, a scientist with a company called Waste Recovery Associates. "Ground water flows underground. This is where a lot of us get our drinking water."

The other big problem with landfills is that sooner or later they are full. For example, Fresh Kills will be filled in just 14 years.

"What's happening," says Cynthia Hallex, an official with the New York City Department →



PHOTO COURTESY ALUMINUM CO. OF AMERICA

Recycling cans and newspapers is the name of the game for many families.



Left: This San Diego, CA, plant uses flowers to clean 20,000 gallons of drinking water a day.

Below: Not only is the water hyacinth pretty to look at, it does a dirty job—making water pure.



of Sanitation, "is that cities are just plain running out of space for landfilling."

Putting Garbage to Work

"The time has come," Cynthia Hallex told CONTACT, "for people to get used to the idea that what we call garbage can be a valuable resource that can be recycled or reused."

In the future, she says, you won't be able to just throw your trash in the garbage can. Instead you'll have to sort out all the different items that can be reused, like cans, glass and paper. For example, more than 50 trillion cans are tossed out every year in the U.S. They all could be recycled to make shiny new cans, aluminum foil and other products.

After you've sorted your garbage, what's left will be taken away in trucks. But it won't be dumped in a landfill. Instead, it will be taken to a waste facility. Such a place already exists. It's called the Delaware Reclamation Project.

There, trash is loaded into a grinding machine and smashed into small bits. Then different materials are sorted out. One machine removes paper by blowing air through the garbage. A large magnet lifts out all the iron. Other machines remove glass, aluminum and other kinds of materials.

Not only can old glass and metal be reused, but the remaining garbage can be used as fuel. New York City plans to burn its trash for fuel by the year 1995. The city is building five special

incinerators, or ovens. These ovens will burn garbage at extremely high temperatures. The heat produced will create steam that will be used to heat large buildings. According to Cynthia Hallex, one fourth of New York's garbage will be burned this way. And, she says, this method will not create any air pollution.

Flowers from Trash

Hi-tech ovens aren't the only new garbage treatment methods. Other waste-cleaning inventions are very "low-tech."

Imagine a swamp filled with plants, fish, shrimp and other animals. Now imagine drinking the water from that swamp. Sound terrible? Well, believe it or not, scientists have developed a way to use a swamp like this to create pure water.

It all started about 10 years ago. Bruce Wolverton, a scientist with the National Space Technology Laboratory, discovered that water hyacinths could absorb huge amounts of waste. (Water hyacinths are flowering weeds that grow on the

surface of ponds and swamps.) At an experimental plant in San Diego, California, these weeds are already being used to clean 20,000 gallons of water a day.

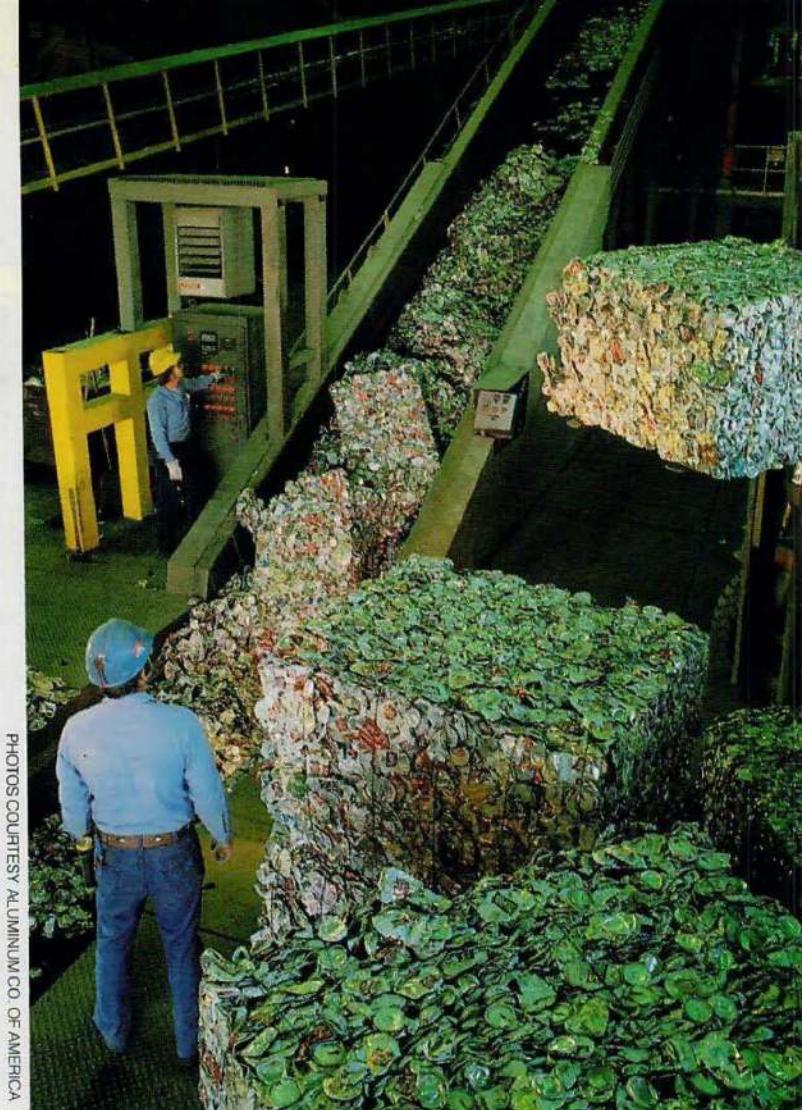
The water hyacinths are grown in artificial marshes, along with shrimp, fish and other plants. Sewage is pumped into the tanks and three days later, out comes squeaky clean water, ready to drink. Soon, this method will be used to make 1 million gallons of fresh water a day.

Recycle And Reuse

Water hyacinths, waste treatment facilities and other inventions will help solve our growing garbage problem. But no invention will solve the problem by itself. The real solution is for people to change their habits.

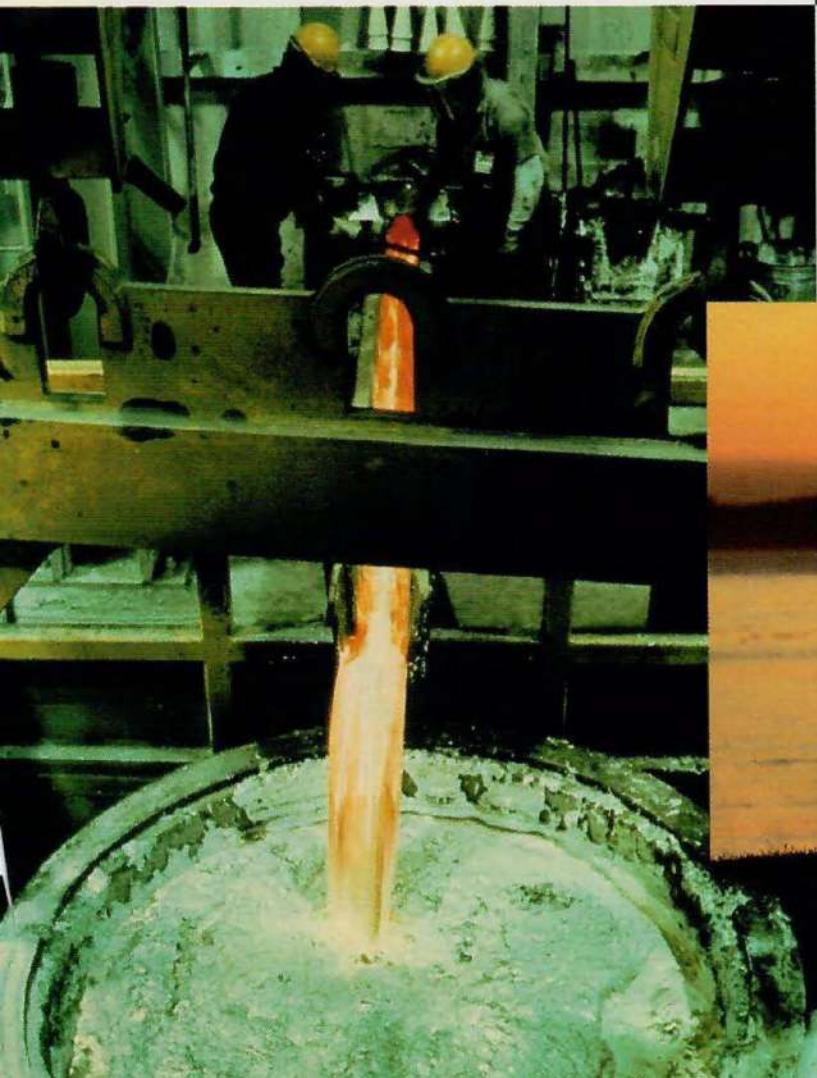
"We're going to have to learn not to be such a throw-away society," says Cynthia Hallex. "From now on, recycle and reuse is the name of the game."

So think about that the next time you're ready to throw out the trash. 



PHOTOS COURTESY ALUMINUM CO. OF AMERICA

Above: Inside a recycling plant, cans go up a conveyor belt to be turned into liquid aluminum (left). Then, new cans will be made.



These kids are cleaning up the environment and making money recycling cans.

BURIED TREASURE

Now that you've read about the Titanic, it's time to do a little treasure hunting of your own. See if you can bring back the treasure in this game.

Setting Up the Board

1. Each player puts a button on one of the boats. These are the playing pieces.
2. Place one penny on each space in the center, where you see jewels. This is the treasure players will dive for.

How to Play

1. Choose who goes first. Take turns moving. Use one of two dice to move around the board.
2. Notice that the board has different paths of color. On your turn, you must stay in the same path. You can move either forward or backward on your turn, but not both.
3. So what are the sea creatures for? When you pass an animal, you may move one path closer to the center, if you want. In this way, you will get to the treasure.

Taking Treasure

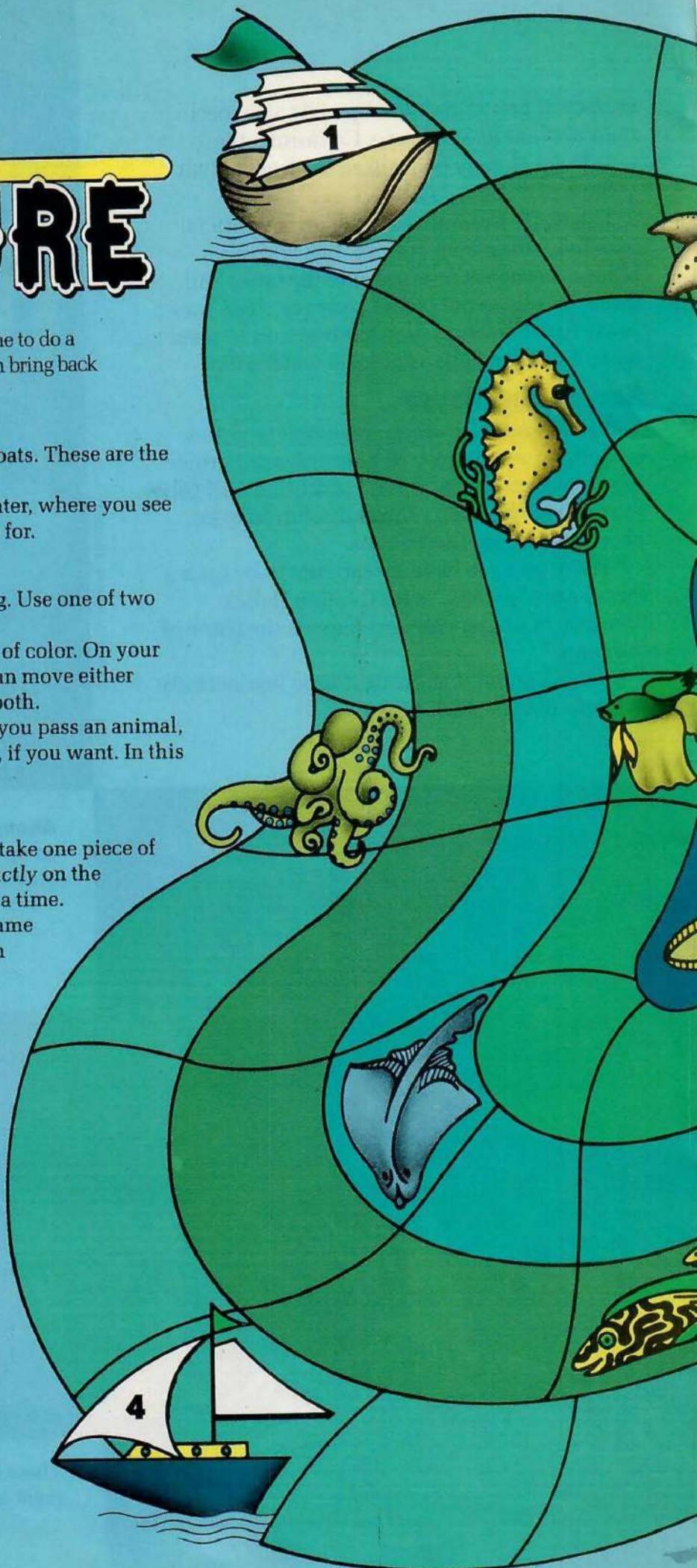
1. When you get to the center of the board, take one piece of treasure. To take a piece, you must land exactly on the treasure. You may only take one treasure at a time.
2. How do you go back to your boat? The same way you came down. Take the treasure with you. You must stay in a path of color until you pass a creature. Then you may move up one path.

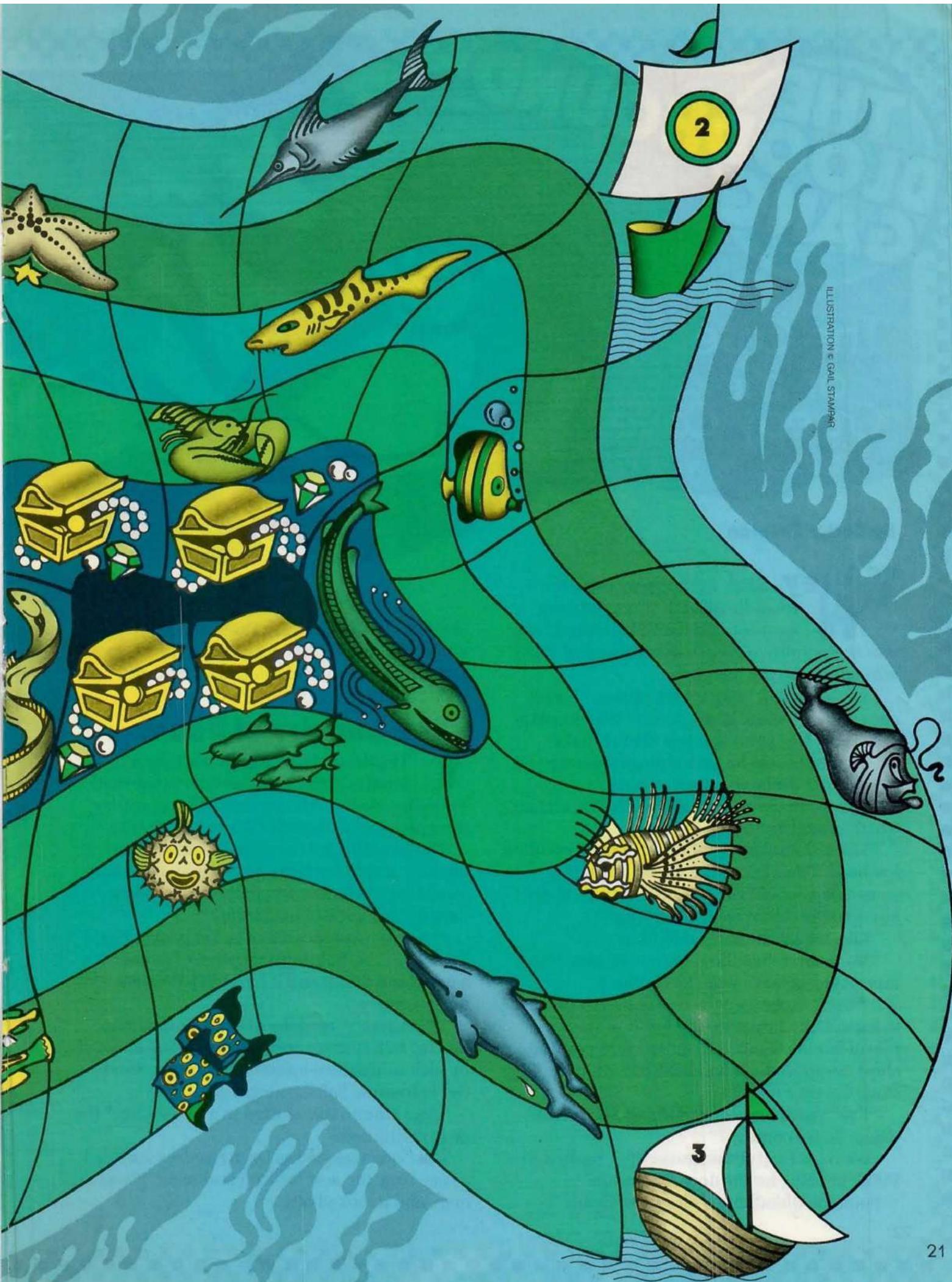
Danger! Lost Treasure

1. You must get your treasure all the way back to the boat. But watch out! If you roll a one, that's bad news. Drop the treasure where you are and leave it there. Put your button back on your boat. You must begin your dive over.
2. The treasure you dropped stays where you left it. You can go back and pick it up. But so can your opponent by landing on it!

How to Win

The first person to return to the boat with one piece of treasure is the winner. You must land exactly on your boat. It sounds easy, but it's not. Why not play the game and see what we mean?





THE BLOODHOUND GANG

The Case of the Creepy Cave

ILLUSTRATIONS BY BOB PEPPER

by Becky Cheston

Whey, Skip, want to play catch?" Ricardo asked. It was a hot June morning and the Bloodhound Gang was in their office. Skip was reading and Vikki was talking on the telephone.

Just then Vikki hung up the phone. "Forget about catch," she said excitedly. "We just got a case! That was Dean Sanders over at Blake University. Seems he got a strange message yesterday from Professor Martin Smith."

"You mean 'South Dakota Smith,' the archeologist?" asked Skip.

"The one and only," Vikki answered, nodding her head. "He's been off on a dig, exploring some 300-year-old ruins. And this time, Dakota has actually discovered something."

"Like what? His hat?" said Skip.

"No, smarty. Just the Keystone Pirates' Fortune. At least that's what he claims."

"Wow!" exclaimed the two boys. According to legend, the Keystone Pirates' Fortune was a pile of fabulous jewels in an emerald-covered chest. Supposedly it had been buried in the Keystone Caverns in 1732.

"That's really neat," exclaimed Skip. "But where do we come in?"

"We'll find out at the university," replied Vikki, heading for the door. "Come on!"

Soon the Bloodhound Gang and Dean



Sanders were standing in Professor Smith's office. Mounted on the walls were spears, masks and other souvenirs of Smith's adventures.

The Laundry of Doom

The dean placed a large package on Smith's desk. "This arrived in the mail yesterday. At first I thought Smith was getting tired of doing his laundry. It's full of clothes."

The Bloodhound Gang looked closer. Sure enough, inside the brown wrapping paper was an old leather jacket, a pair of trousers and a dark felt hat with a broad brim.

"I found this hidden in a jacket pocket," said Dean Sanders, holding up a piece of paper. "It's a note from Smith and it looks like it's been written in a hurry."

"'Sanders,'" read the dean, "'Found map leading to Keystone Fortune. Am being pursued by vicious treasure-hunters. Map is enclosed. Get to treasure before thieves do.'

"And I found this stuffed in a trouser leg," the dean continued.

The Gang watched as Dean Sanders unrolled a very large piece of brown parchment. It was a map, and it looked old.

Vikki looked at the map closely. "It's a map of the Caverns, all right!" she exclaimed.

The Keystone Caverns were a maze of caves and tunnels less than five miles away.

Ricardo looked over Vikki's shoulder. "There's nothing on the map to point out exactly where the Fortune is buried," he said. "What are we supposed to do? Dig up all the caves? There are miles of them!"

"Here," said Sanders. "This note was attached to the map."

Vikki read it out loud. "To use map, hang it by the marks in the first cavern."

Just then there was a commotion at the door and in walked TV reporter Patty Parker and a three-person camera crew.

"Hi guys," said Patty. "Mind if I tag along? We got an anonymous tip that a treasure hunt was going on. We're going to cover it!"

Raiders In The Dark

As soon as they arrived at the entrance to the caverns, Vikki noticed that Skip was missing. Everyone wanted to get started, so they entered the cold, dark caverns without him.

"This is creepy," whispered Ricardo. "One good thing about having Patty Parker around is her TV lights."

Vikki walked over to the wall of the cavern. Close to the ground, a rectangle had been carved in the stone. She taped the map up—and it fit exactly in the rectangle.

"What now?" asked Ricardo. "The map is on the wall in the right place, but there's still no way to tell where the treasure's buried."

"Maybe this will help!"

Everyone turned to see Skip standing in the cavern entrance. He was wearing Smith's hat.

"Where have you been?" asked Vikki.

"Trying to decode this," replied Skip, as he held up a piece of paper. "It was in the hat."

Everyone looked at the note. Like the map, it was scrawled on brown parchment.

"Read it!" said Ricardo.

"Look into the camera," said Patty Parker.

Skip looked into the camera and smiled.

"There are three rhymes here," he said. Then he recited the first one.

"You can call me Helios, or Apollo or Ray.

I'll help you find the treasure 93 million miles

away."

Next Skip read the second poem.

"At 321 and 923, daylight equals night.

But once a year, day's extra long and a treasure comes to light."

Everyone looked confused, and Skip read the third rhyme.

"Hickory Dickory dock,
This number tops the clock,
It's time for lunch,
And I've got a hunch,
That a treasure will unlock."

"I've got it," Ricardo yelled as soon as Skip finished the last rhyme. "Helios, Apollo and Ray are all names for the sun. And the sun is 93 million miles away from Earth. So the sun is supposed to help us read the map. Turn out those lights!"

The TV crew shut off their lights and the cave went dark. After a moment, their eyes adjusted to the dark, and they could see a light shining down from a crack in the cavern ceiling. The light formed a narrow line a few inches wide on the floor of the cavern. It went up the wall and ended just before the map.

"That's no help," said Ricardo as the TV crew turned their lights back on. "Now what?"

"The second clue," said Skip. "And I think



I've got it. At the equator, daylight equals night twice a year—during the spring and autumn equinoxes. The number 321 means the 21st day of the third month: March. That's the spring equinox. And 923 is September 23, the autumn equinox."

"Then what does 'day's extra-long' mean?" asked Vikki. →



"That happens once a year, at the summer solstice, June 21."

"That's in three days!" said Ricardo. "The longest day of the year."

"Then I think I know what the third rhyme means," said Vikki. "Something is going to happen at 12 noon. Noon is 'time for lunch,' and 12 is the number that 'tops the clock'."

"So?" asked Skip.

"So," replied Vikki, "we come back here three days from now at 12 noon."

Jewel Of The Guile

JThree days later, everyone was assembled once more in the main room at Keystone Caverns. Vikki hung the map within the markings on the wall. Then at noon, the TV crew turned off their lights. Once more, the only light came from a crack in the cavern ceiling. But this time, the line of light ended inside the map, not the edge.

"X marks the spot!" yelled Ricardo. "Look! The line of light ends right where the third room of the caverns is marked on the map!"

"I don't get it," said Vikki. "Last time we were here, the line of light didn't even reach the map. Now it points to the third cavern."

"I think I know," said Dean Sanders. "Since then the angle of the sun has changed."

"That's right," explained Skip. "June 21 is not only the longest day of the year, it's also the day when the sun is highest in the sky. That line of light will only point to that spot on just one day of the year—today!"

"And I bet it's telling us where to look for the Pirates' Fortune," said Ricardo.

The Bloodhound Gang, the dean and the TV

crew all rushed to the third room of the caverns. Strangely, there was a pile of fresh dirt right in the middle of the room.

"Mmm, that's odd," said Vikki.

"Good thing I brought a shovel," said Skip as he began to dig. After just a few shovelfuls, he hit something.

"Hey, guys, give me a hand," he yelled.

Vikki helped him pull something out of the ground. It was a small treasure chest. Its sides twinkled green in the TV lights.

"The Pirates' Fortune!" said Vikki in wonder.

"Hold it, honey," said Patty Parker. "I know an emerald when I see one. That stuff's nothing but glass."

With a puzzled look, Vikki opened the chest. There was nothing inside but a note.

"Look into the camera," said Patty Parker. Vikki read the note.

"Hi there, everyone. If you've enjoyed this treasure hunt, just wait until you see what I've got in store for you in the summer session of Archeology 101. Taught by yours truly, Martin South Dakota Smith. See you in class."

"Got that all on tape?" asked a voice coming from one of the smaller tunnels.

"Why South Dakota Smith—you old devil!" said Patty Parker. "So it was you who called in the anonymous tip. This whole thing was just a publicity stunt."

"But not much of a case," said a disappointed Ricardo.

"What a waste of time," said Skip.

"I wouldn't say that," said Smith. "You solved the puzzle—on live TV! I'd say you were a bunch of lucky detectives."

"Yeah," said Skip, "but we're not too fortune-ate." 

**Watch for
next month's
Bloodhound Gang
mystery!**

IT'S YOUR ULTIMATE CHALLENGE!

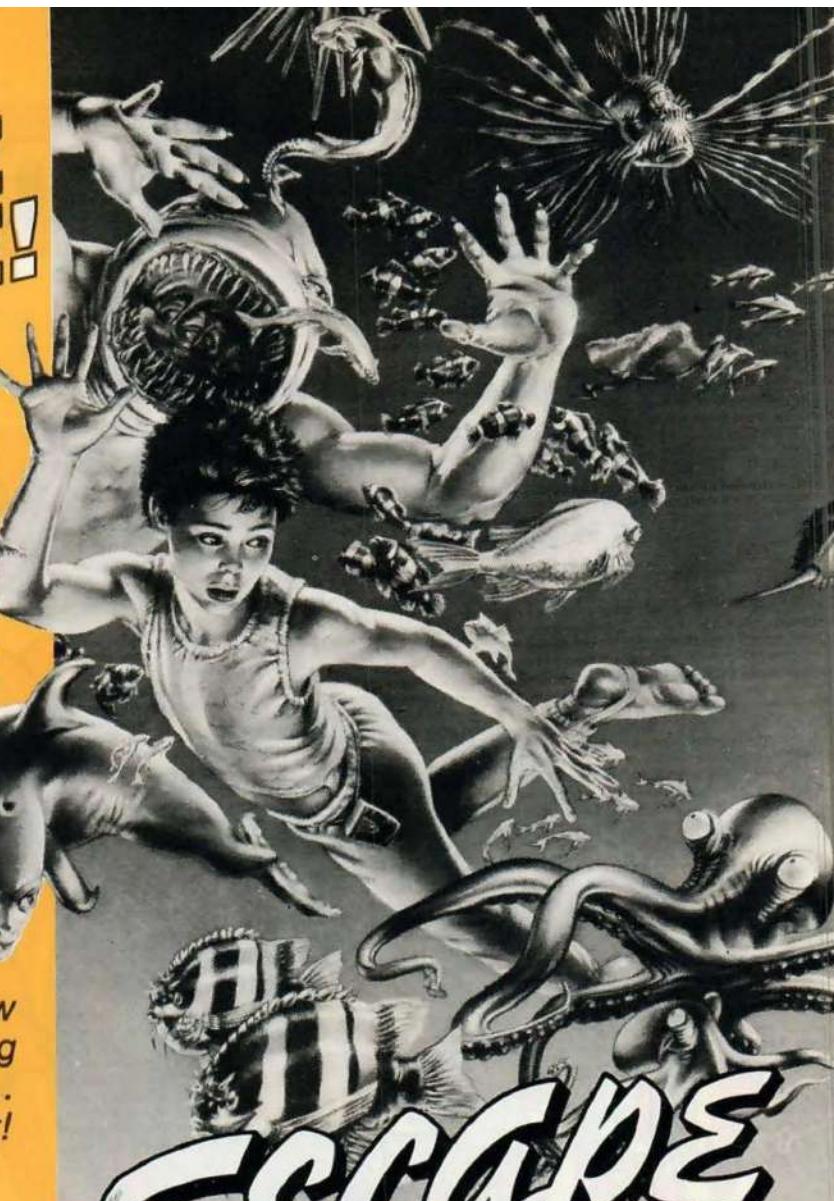
You're on a
desolate island

somewhere on the mysterious
planet of Tenopia. There is danger
all around you...man-eating
spiders and weird half-human
crogocides who will hunt you
every step of the way!

You know you must
escape—but how?

That's your challenge in this
exciting new series of books.

Each one takes you on a new
fantasy adventure full of terrifying
dangers. There is only one escape...
and it's up to you to find it!



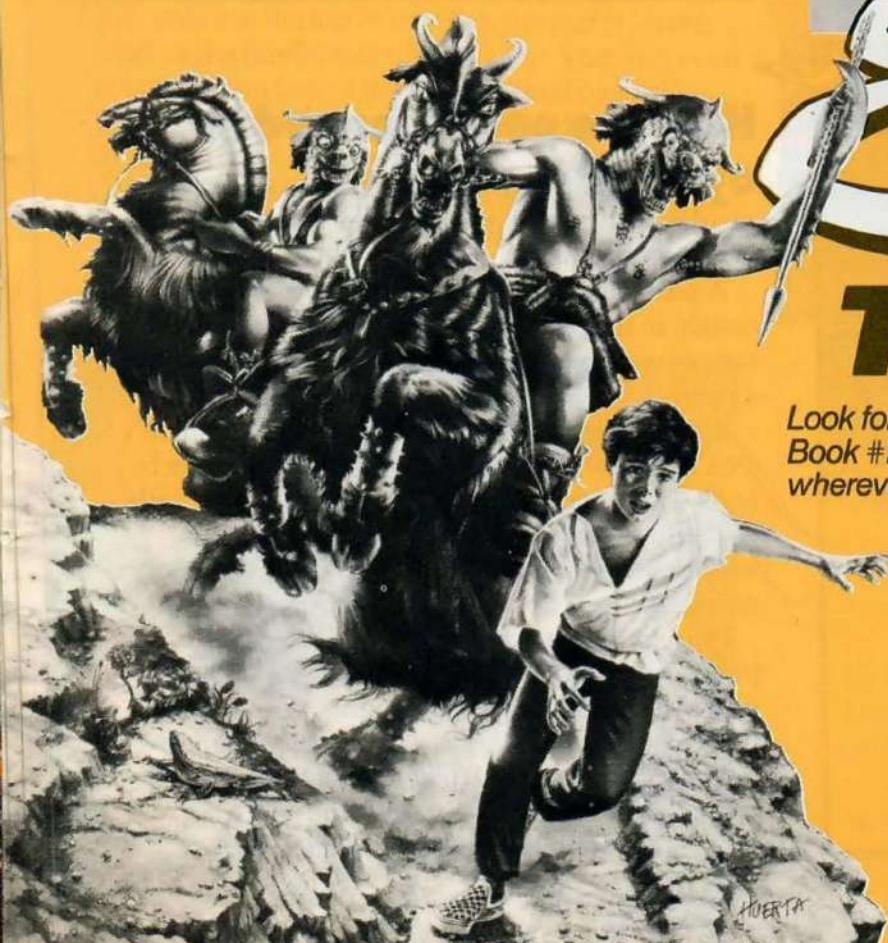
ESCAPE™ FROM TENOPIA

Look for Book #1: **TENOPIA ISLAND** and
Book #2: **TRAPPED IN THE SEA KINGDOM**—
wherever books are sold.



BANTAM

From Edward Packard, Creator of
CHOOSE YOUR OWN ADVENTURE®



Any

Questions?

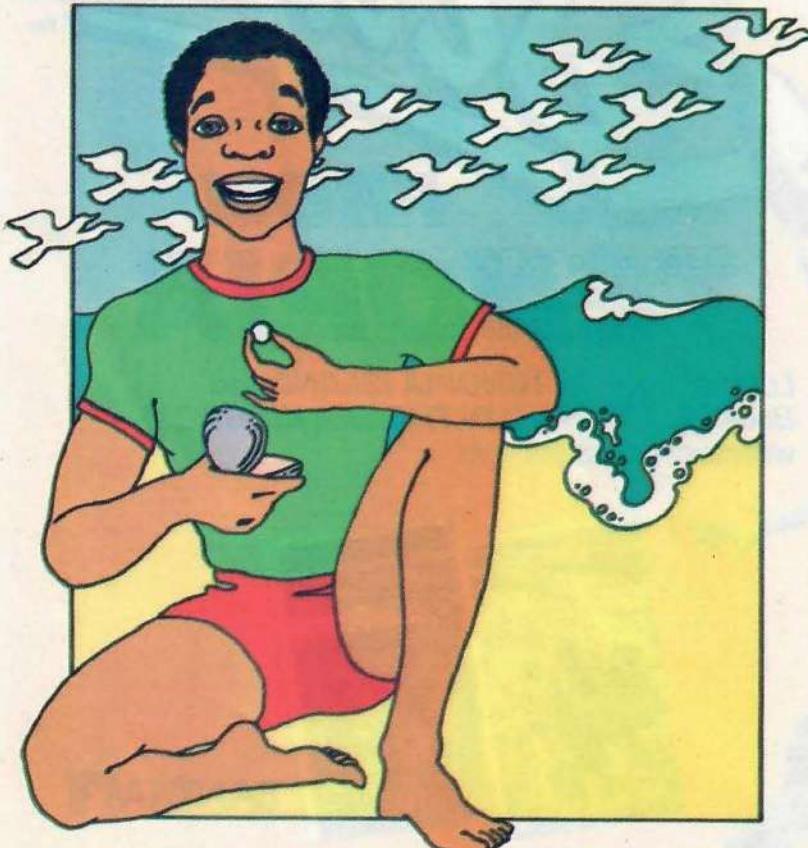
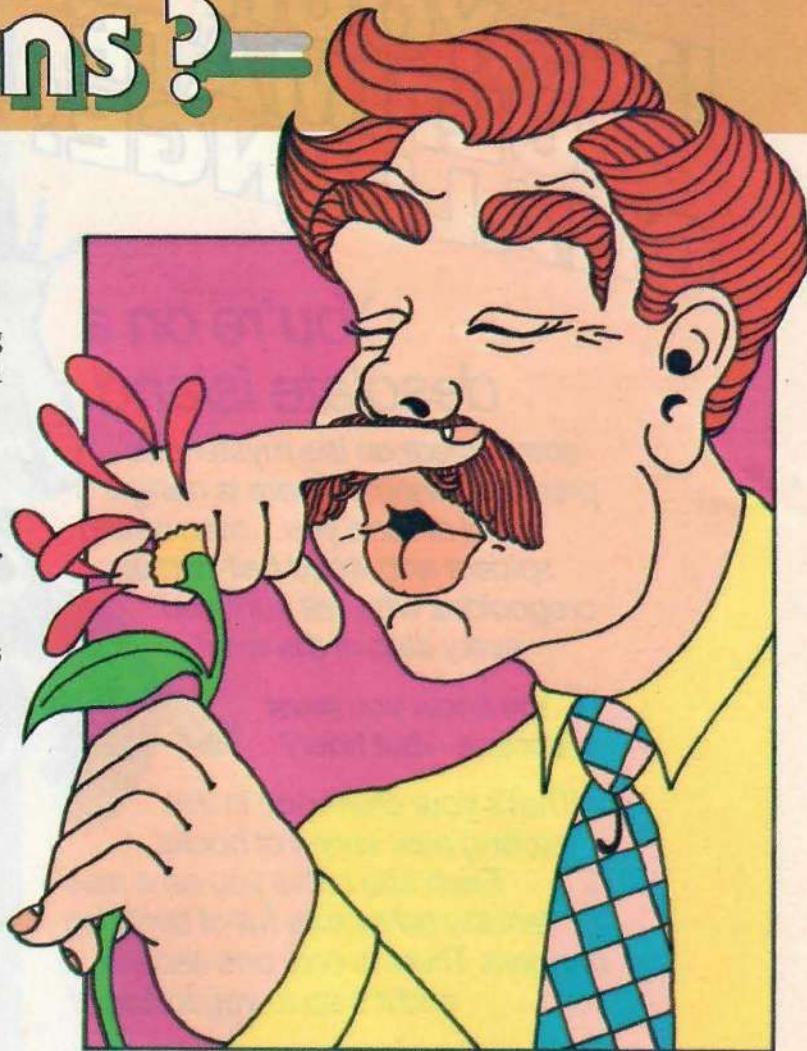
Why do people get allergies?

An allergy is a reaction to something that rubs you the wrong way. Having an allergy is a little like being sick, but only certain people get allergies. People can be allergic to many things, including animal hair, dust, flower pollen and different foods.

Take flower pollen, for example. When you smell a flower, you also breathe in tiny bits of pollen no bigger than specks of dust. If you are allergic to them, your body reacts as if bits of pollen were invading germs. The cells in your body produce special chemicals, called antibodies, that fight germs. That's good. But the antibodies cause some of your cells to release another chemical. This one makes your nose run, your eyes water and ah...ah...AH-CHOOO!

No one is certain why some people have allergies while others do not. There are no cures for allergies. But there are medicines and treatments that make them less of a pain in your nose.

Question sent in by Brad Williams, Hunlock Creek, PA.



How are pearls formed in oysters?

When an oyster makes a pearl, it has no idea it is making jewelry. All it is trying to do is protect itself.

A pearl starts out when a little bit of sand gets caught in the soft inside of an oyster. The oyster cannot wash away the irritating particle. So it makes a pearl.

A pearl is made from a substance, called nacre (NAY-kur), which lines an oyster's shell. Layer by layer the oyster covers the little grain of sand with this shiny stuff. If you cut the pearl in half you would see that the inside looks just like the layers of an onion.

Pearls come in many different colors, including pink and orange. The most famous are the "black" pearls. (Actually they are dark gray.) Only the sea pearl oyster, which lives in very warm seas, makes these valuable pearls. It takes about three years for the pearls to form. But it's worth the wait!

Question sent in by Angela Ortenzi, Stroudsburg, PA.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

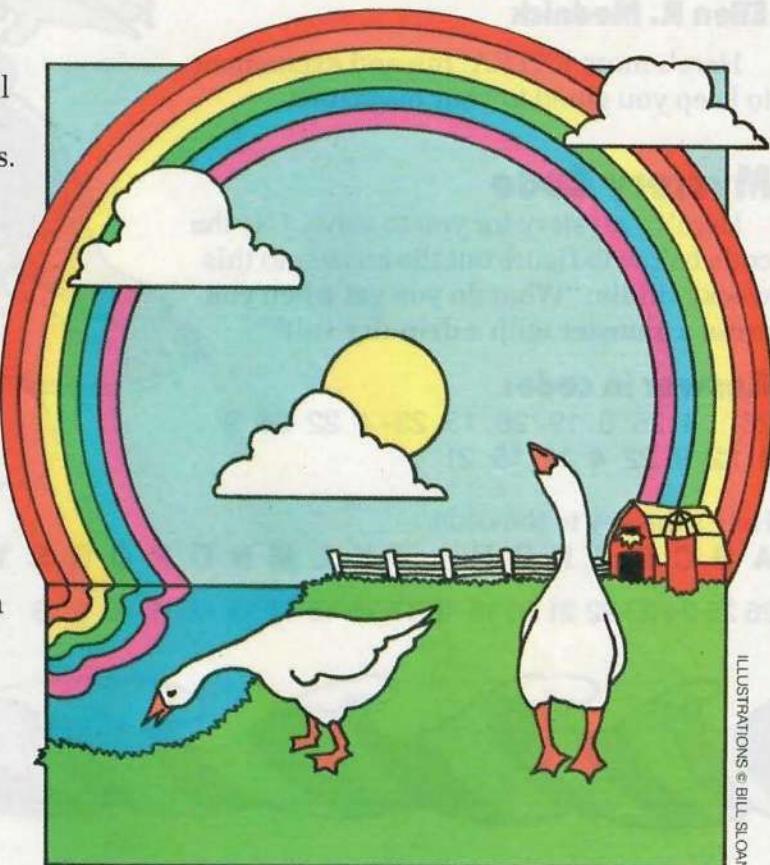
Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

Why are rainbows in arcs? You'll never find the pot of gold at the end of a rainbow. That's because rainbows don't end. They are circles. The arc of color you see is just a small part of the rainbow.

For a rainbow to form, you need two things: sunshine and air loaded with water. The sunlight looks white. But white light really is made up of all colors. The water in the air bends the light and separates it into the colors. That's why you see a rainbow.

How much of the rainbow you can see depends on where the sun is in the sky. When the sun is high, most of the rainbow is below the horizon. You only see the top of it. When the sun is lower, more of the rainbow circle is visible. You may even see more than half of it. Under special conditions, people flying in planes have been lucky enough to see the whole rainbow circle.

Question sent in by Heather Wickman, Gardner, MA.



ILLUSTRATIONS © BILL SLISZON



Why does water evaporate?

Water comes in three forms. There is the splashy kind you take a bath in. Then there is the frozen kind you pack into snowballs. The last kind is an invisible gas. In this form it is called water vapor (VAY-purr). When it is very humid out, a lot of this vapor is in the air all around you.

The very tiniest bits of water, ice and water vapor look the same. One thing makes them different—heat. You know that heat can turn ice into water. It can also turn water into vapor.

Suppose you leave a bowl of water outside. The air warms the surface of the water. That causes the tiniest bits of water to start moving. When a bit of water is heated enough, it gains the energy needed to break loose from the water's surface. It becomes vapor and mixes with the air.

Water will evaporate faster on a warm day than on a cool day. The hotter it is, the faster the bits of water move. You can't see the evaporation happening. But after a few hours, you will notice there is less water in the bowl than when you filled it.

Question sent in by Ellin Ramsey, Proctorville, OH.

Extra!

by Ellen R. Mednick

Here's more EXTRA! fun and excitement to keep you glued to your magazine.

Mystery Code

Here's a mystery for you to solve. Use the code below to figure out the answer to this wacky riddle: "What do you get when you cross a monster with a drip-dry suit?"

Answer in code:

26 4 26 8 19-26 13 23-4 22 26 9
4 22 9 22 4 12 15 21

Here's the key to the code:

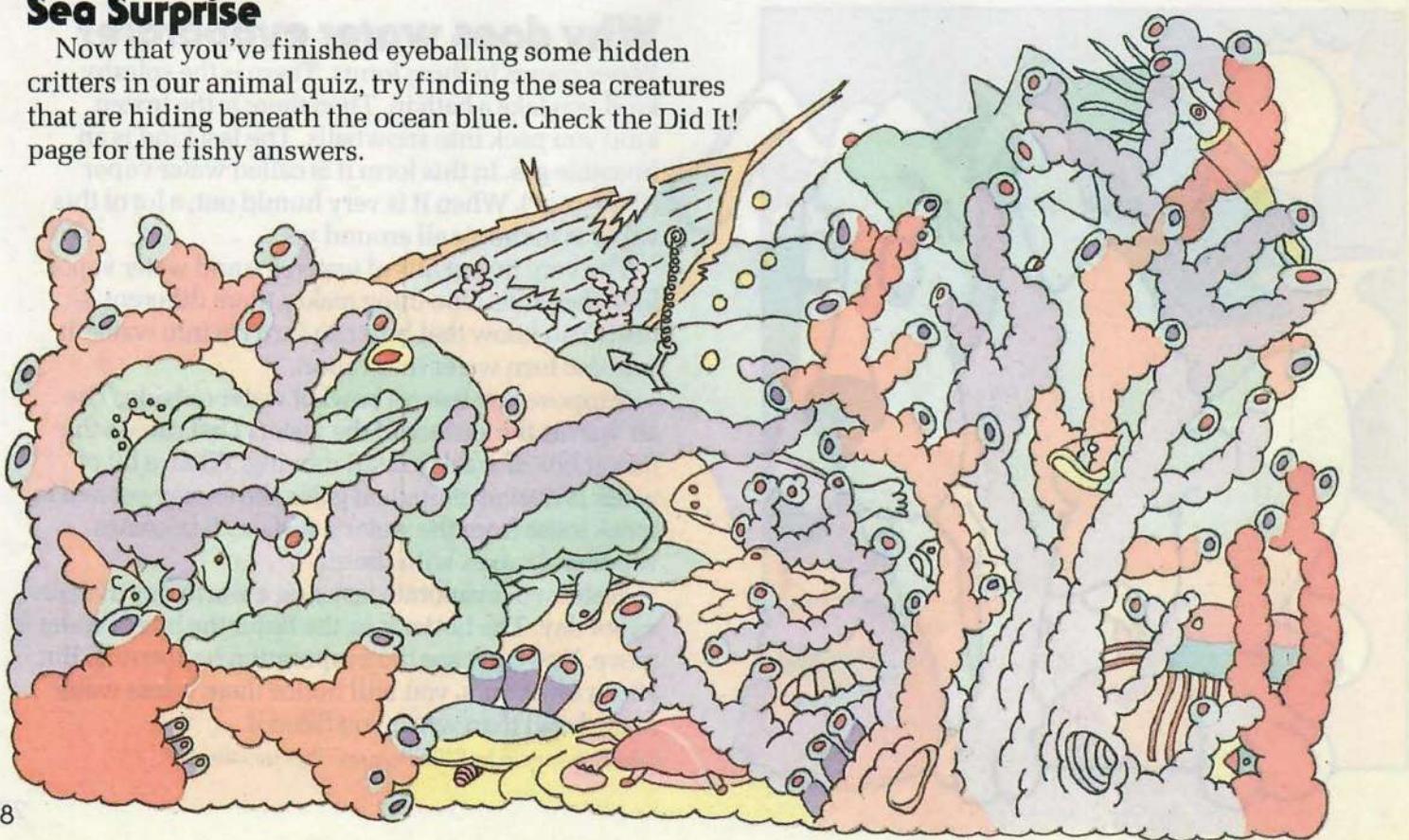
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



Sea Surprise

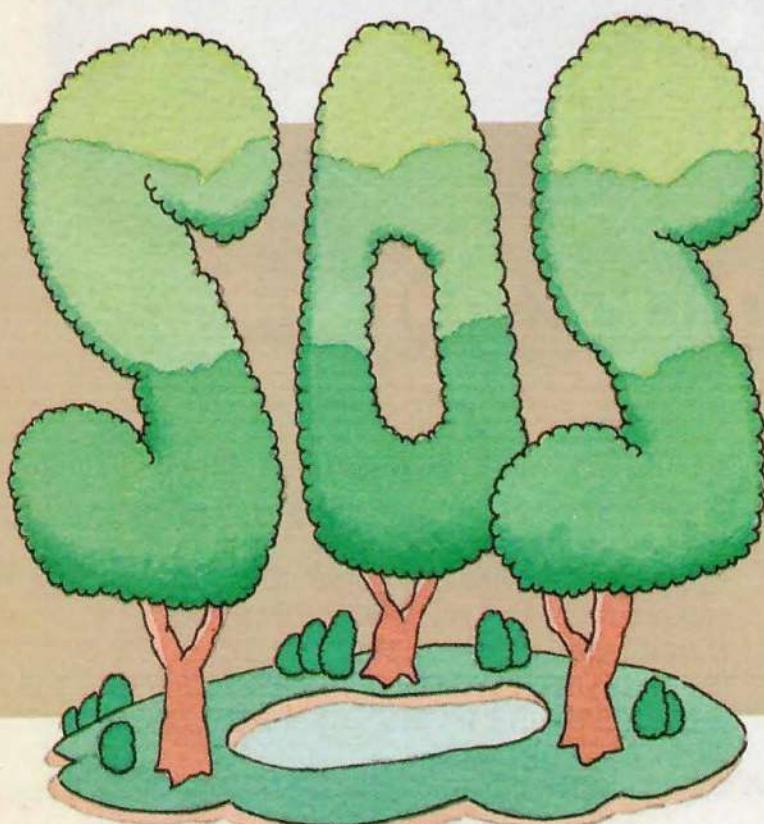
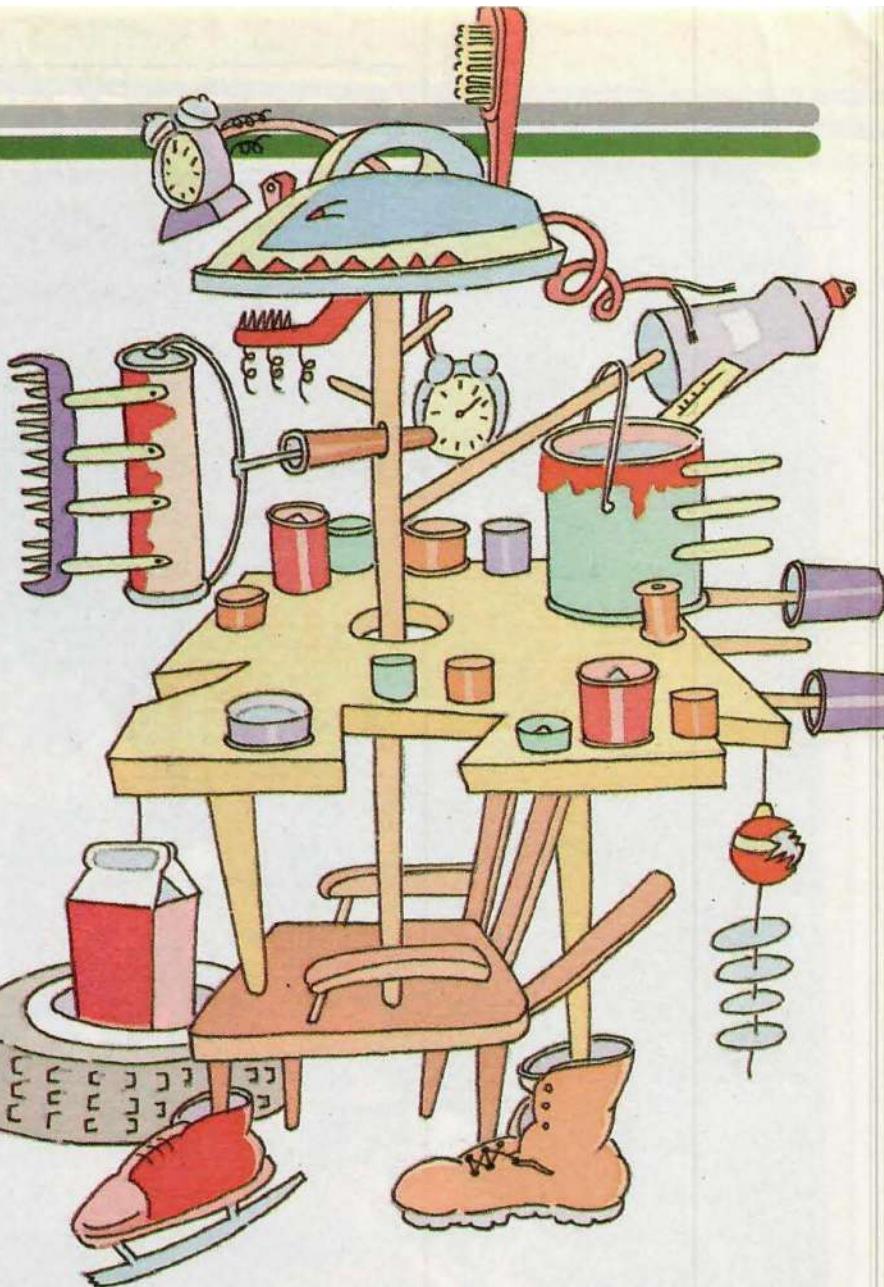
Now that you've finished eyeballing some hidden critters in our animal quiz, try finding the sea creatures that are hiding beneath the ocean blue. Check the Did It! page for the fishy answers.



Junk Jamboree

Who said junk is just a pile of garbage? No way! With an adult's okay, rummage through your house. Then use your imaginative powers to create a junk sculpture. It can be as weird or as wonderful as you like. Then take a photograph of your creation. (Sorry we can't return the photos.) We'll choose our favorites. Winners will receive CONTACT T-shirts. Write to:

Junk Contest
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657



Helping Out

Want to learn more about how you and your family can help the environment? Then send away for this free booklet on recycling. There's loads of information with tips for you and your parents. Mail a stamped self-addressed business-size envelope to:

**National Association of
Recycling Industries
330 Madison Avenue
New York, NY 10017**

Contact Lens



PHOTO: K.G. PRESTON/MATHAM © 1995 TIME INC.

A Flower or An Insect?

Did you ever wish you could blend into your surroundings? Have you ever wanted to disguise yourself so no one could recognize you? Of course, that's not easy—if you're human.

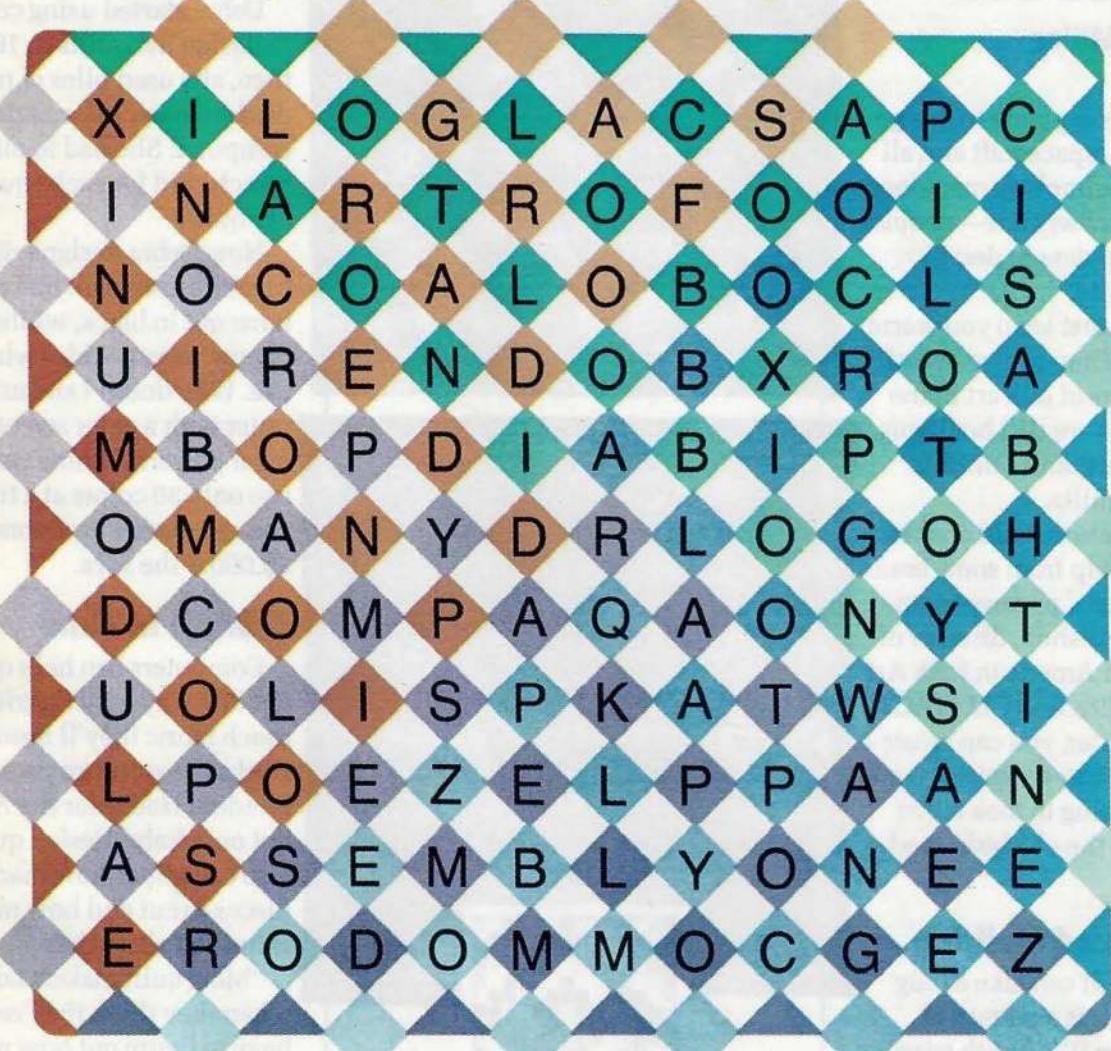
But for insects, that's often a lifesaving snap. Since insects are small—and tasty—they are often a dinnertime target for larger animals. So some insects can protect them-

selves by blending into their surroundings.

The African praying mantis (above) is one such insect. The colorful pattern on its body helps it to blend in with surrounding flowers and plants. Its large yellow eyes give it wrap-around vision. This helps the African praying mantis to see what's happening in front, on its sides, and behind. It's a bug-eyed way to be on the look out for enemies.

ENTER

THE
HIGH-TECH
WORLD OF
COMPUTERS



Word Hunt

Here's a list of different makes of computers and computer languages. See how many you can find hidden in the puzzle. Words can go across, backwards, up, down or diagonally.

ADA	COBOL	FORTRAN	PILOT
ALGOL	COMMODORE	IBM	RPG
APL	COMPAQ	KAYPRO	SNOBOL
APPLE	DEC	LISP	TANDY
ASSEMBLY	DYNAMO	LOGO	UNIX
ATARI	EASY	MODULA	WANG
BASIC	FORTH	PASCAL	ZENITH

ILLUSTRATION BY AL NAGY

newsbeat

Patchwork Processors

by Russell Miller

People use computers to design cars, airplanes, spacecraft and all sorts of high technology machines. But here's a new wrinkle—people are using computers to design patchwork quilts.

Quilts don't just keep you warm in the winter. They're also one of the oldest forms of folk art in the U.S. And quilts are still hot items. Last year, more than 14 million people made quilts.

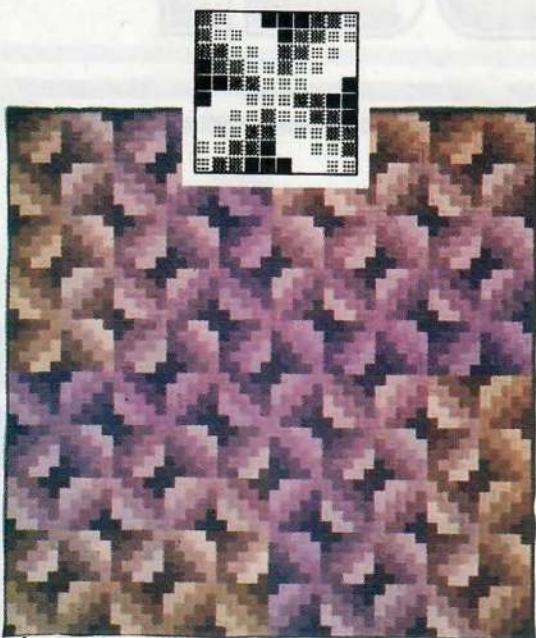
Now this centuries-old craft is getting some help from some brand new technology—personal computers. Robert Bishop, director of the Museum of American Folk Art in New York City, told CONTACT, "With a computer, you can create a quilt design in three minutes—and it's probably going to look better than one done the old-fashioned way."

Computerized Quilting

Making a quilt can take a long time. Each quilt is a pattern of squares that are filled with triangles, diamonds, half moons and other shapes. It takes a lot of work to plan all the little pieces that make up the design.

That's where the computer helps. With a computer, a quilt maker can create designs quickly, change them around, choose the best ones, then easily print them out. Cutting and sewing is still done by hand.

Debra Millard, a professional



Debra Millard's colorful quilts start out as black-and-white computer designs (see insets).

quilter from Englewood, Colorado, designs quilts on her Macintosh computer. "It saves me time, and it helps me to go farther than I would have," she told CONTACT. "If I had

to draw all those patterns out by hand, I might stop before I got to one I liked, but now I can explore lots of designs and pick the best."

Debra started using computers to design her quilts in 1978. Back then, she used piles of paper punch cards to enter information into her computer. She had to make one punch card for each square on her quilt.

Now Debra designs right on the Macintosh screen. She prints patterns out in black, white and shades of grey, then decides what colors to use. Why doesn't she use a computer with a color screen? Even the most powerful home computer can use only 30 colors at a time—not enough choice for Debra. "I want 30,000," she says.

A Stitch In Time

Computers can help quilters another way—by figuring out how much fabric they'll need. Patchworks is a software package from Random House for the Apple II. It not only helps design quilts, but also calculates how many little pieces to cut and how much fabric is needed altogether.

"Most quilt makers collapse when they think they're going to have to figure out how many yards they'll need, sizes and so on," says George Zopf, Patchworks' co-author. "Now the computer does that work for you."

Debra Millard believes computers can change the course of quilting. "It's a tool," she says. "I use it to draw patterns like you might use a ruler to draw a straight line." This "tool" just may sew up a bright future for an age-old folk art.

PHOTOS COURTESY DEBRA MILLARD

The Slipped Disk Show

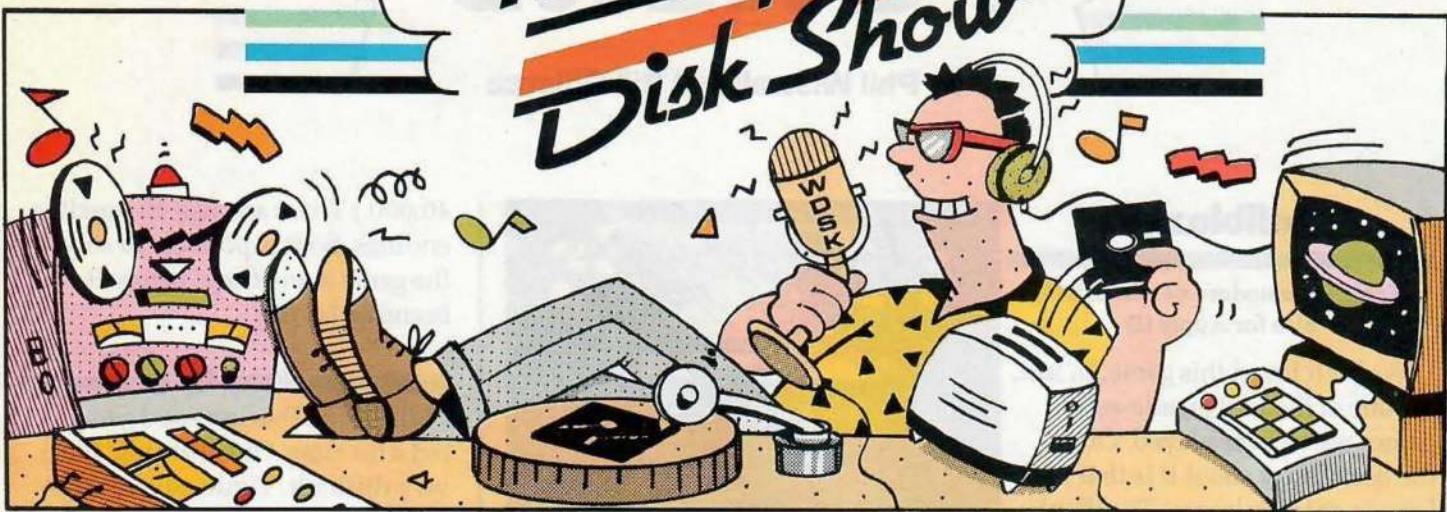


ILLUSTRATION BY CAMERON EAGLE

Hi there, you crazed computer kiddies! Slipped Disk here, just back from vacation and did I have fun! Two weeks in Hawaii! Well, I was supposed to go to Hawaii. I bought bus tickets and suntan lotion and everything. Then I find out the bus doesn't go to Hawaii.

Anyway, with the money I had left over, I bought two weeks worth of popcorn and a complete set of "Leave It to Beaver" videotapes to watch on my VCR. So I guess I did have a pretty great vacation after all. Anyway, I'm back in the old answer factory and rarin' to go.

And speaking of factories, here's a question from **Craig Russell**, 11, of Muleshoe, Texas. Craig asks:

"Can a computer run a factory?"

Well, Craig, computers could run factories if they wanted to, but they'd rather play "Invaders from the Weird Planetoid."

But seriously, more and more robots and computers are being used in factories. Robots help build cars, machinery and yes, other robots. Computers are used to control the robots.

The Apple Macintosh personal computer is put together in a factory that uses many computer-controlled robots. Robots automatically bring new parts to the assembly line

when they are needed. This is one of the most automated factories in the U.S. However, even in factories like this, there are still many jobs robots cannot do.

But Craig, there is one big problem with computers working in factories—they can't play on the company bowling team.

Speaking of teams, our next letter is a team effort. It comes from **Jill Depto** and **Sherri Hinerman**, both 10, of Dallas Pike, West Virginia. They want to know:

"How are computer disks made?"

For many centuries, people believed that floppy disks were made by disk elves at the South Pole. (Well, I believed it.) However, today we know that floppy disks are made from sheets of plastic with a magnetic coating on it.

The sheets of plastic are stamped (cut) into round disks with a large hole in the center. There are also one or more small holes that serve as guides for the disk drive. Then the disk is sealed inside a stiff, square envelope to protect it from dirt, dust and fingerprints.

And I think we've spent enough time—um, diskussing—that. Time for our next computer query, from **Christy Dreyer** of Katy, Texas. Christy asks:

"How long will a computer last?"

Christy, different parts of a computer have different lifespans. The parts that tend to break down first are usually mechanical, like the keyboard or the disk drive. That's because they have moving parts that can wear down or break or get gummed up when you spill food on them.

Microchips and other electronic parts don't wear out. But they can break. For example, the electricity inside a computer creates a lot of heat. Unless the computer is cooled properly, this heat can cause a microchip to break down. That's why some computers have built-in fans. However, a well cared-for computer should last a long time.

Well, I'd like to go on answering questions but my computer just broke. I'll get it fixed by next month. Meanwhile, if you have any computer questions you want me to answer send them to:

The Slipped Disk Show
3-2-1 CONTACT
1 Lincoln Plaza
New York, N.Y. 10023

See you then!

The Slipped Disk Show is recorded live in front of a couple of people from out of town.

REVIEWS

by Phil Wiswell and Bill Gillette

Ballblazer

(Epyx, Commodore 64, about \$35, also for Apple II)

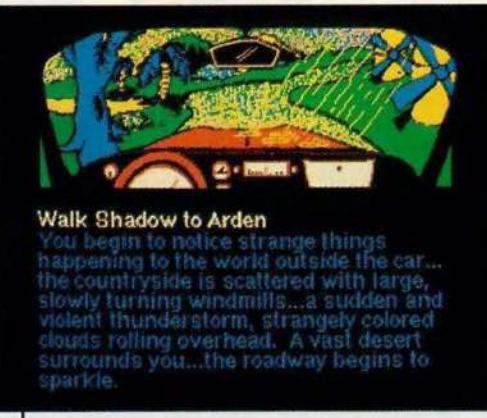
We both loved this game. In fact, it's one of the best arcade-action games we've ever played. One of the best things about it is that it's for one or two players. The display is split in half horizontally. The top half of the screen shows the viewpoint of player one, the bottom half shows the view of player two. Take our word for it: It's a wild and wonderful new game experience.

The rules of the game are simple. It's based on soccer. There is a ball and each player has to defend a goal at one end of a playing field. But no game of soccer was ever like this! Your player glides over the surface of the field like a hovercraft. You can catch the ball and "run" with it, or you can shoot it away from you.

Wrap-Up

Bill: This is one of the best two-player games ever designed! And great graphics!

Phil: If you have a friend and you're into sports, then you won't be disappointed with Ballblazer. It's great!



Nine Princes In Amber

(Telarium, Apple II, \$39.95, also for the Commodore 64 and IBM)

This graphics/text adventure is based on a series of science fiction books by Roger Zelazny. It tells a strange tale that's not very easy to figure out. In fact, you'll probably wonder what's going on the first few times you play.

There are three reasons for this. One, you are on a very strange new world. Two, you have eight brothers and four sisters who are all trying to win the throne of the Kingdom of Amber. Three, you are suffering from a loss of memory. You can only learn whom to trust through experience.

The game begins with your escape (hopefully) from a hospital where your family placed you because you are such a strong contender for the throne. In order to succeed you have to play a careful game of family politics. You have to make deals with some of your brothers and sisters, which you may or may not keep. Of course, they will do the same.

There are many ways to play and solve this adventure. (The package claims there are over

40,000.) There are also 40 possible endings. So it is possible to solve the game many times before it becomes boring.

Wrap-Up

Phil: I think this is a good game, but a bit slow. One warning: It is very difficult. Timid adventurers keep out.

Bill: This is one of the few Telarium adventures I really enjoyed. Great plot, hard to solve.

Fight Night

(Accolade, Commodore 64, \$29.95, also for Apple II, \$34.95)

Fight Night is the sport of video boxing at its wildest and grungiest. Though the graphics, animation and sound effects are well done, the game itself is pretty boring. It's fun the first few times you play it, but we feel that like a lot of boxing games, it will soon be gathering dust on a shelf.

You face a series of increasingly tough fighters. You must defeat the first to get to the second, and so on. Each of the fighters has his own personality and swinging style. The graphics are quite good. Still, there's nothing really new or exciting here, except the feature that lets you build your own fighters from different body parts.

Wrap-Up

Bill: Not up to par with Accolade's other programs. There wasn't enough variation.

Phil: I don't like this game. There are better boxing games on the market.

The Cave of Time

(Bantam, Apple II, \$34.95, also for Commodore 64)

This is another in a series of games adapted from the best-selling "Choose Your Own Adventure" books. It features four separate graphics/text adventures in which you travel through time. You can go from prehistoric caves to a train carrying President Lincoln to his speech at Gettysburg. The object of the adventures is to locate items and return them to their rightful place in history.

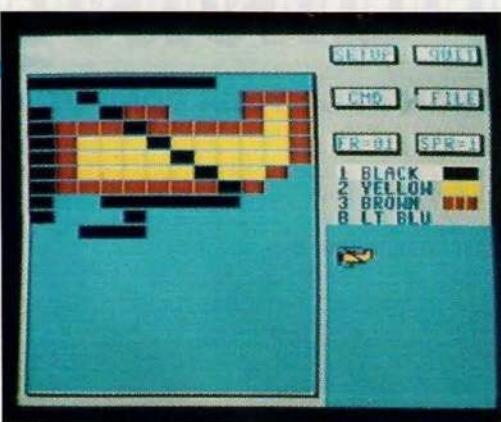
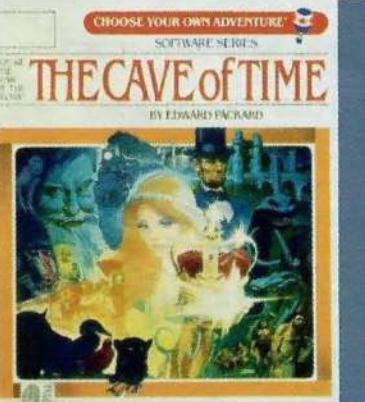
In most adventure games you type in words or phrases to tell the computer what you want to do. In this one you only have to hit a key. For example, you run into a giant sloth with a spear in its back. Your choices are to 1) remove the spear, 2) continue on your journey. Pressing either key continues the action.

Each adventure uses video-arcade action to move you from one scene to another. They aren't really games, and this gimmick doesn't add much.

Wrap-Up

Phil: I'll forget this one quickly, though I think younger players will find it interesting.

Bill: It got boring and, besides, you can buy the book for \$3.00 and it's much better.



Gamemaker

(Activision, Commodore 64, \$39.95, also for Apple II, \$49.95)

Gamemaker is a computer game construction set and it is a lot of fun. It is also very easy to use. You can create your own computer game without knowing a single bit of programming. Instead, you use a joystick to select the parts of your game from an on-screen menu.

Gamemaker consists of five programs: Spritemaker, Scenemaker, Soundmaker, Musicmaker and Editor. By using each of these design tools, you can blend graphics, animation and sound effects into original action games.

You can also store your new game on a disk and play it without using the master disk. That means you can send your creations to friends and they can play them even if they don't own Gamemaker. This may be one of Gamemaker's best features.

The side benefit of this program is the way it teaches you the different elements of a computer game program.

Wrap-Up

Phil: This is one of the best computer construction sets available. It's simple and fast.

Bill: Gamemaker gets my vote for best programming tool of the year! So much easier than programming.

Sky Lab

(MECC, Apple II, \$49)

This educational tool is more than just a home planetarium. It helps you understand the real relationship of the stars, planets and other objects in space. You can look at the sky from many different viewpoints: From your backyard looking up, or from a point miles above the North Pole!

All four parts of the program use color graphics. In the first, you are asked to rotate the Earth until a desired position is reached. Next, you must move the Earth in its orbit around the sun to line up a particular constellation. The third part teaches you the relation of the Earth to the planets Mars and Venus. Part four involves Halley's comet, so if you missed the real thing...seriously, the Halley's comet program was one of our favorite activities on the disk.

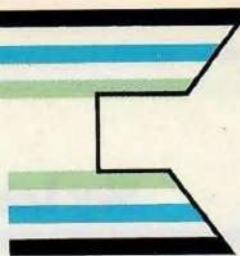
Editor's note: This program is not available in most stores but you can order it directly from MECC at 3490 Lexington Avenue North, St. Paul, MN 55126.



Wrap-Up

Phil: Sky Lab is a good educational tool and works well with a number of people using it together.

Bill: Yes, it's a good tool, but it's not fun. It's a great astronomy program but not a game at all.



basic TRAINING

PROGRAMS FOR YOUR COMPUTER

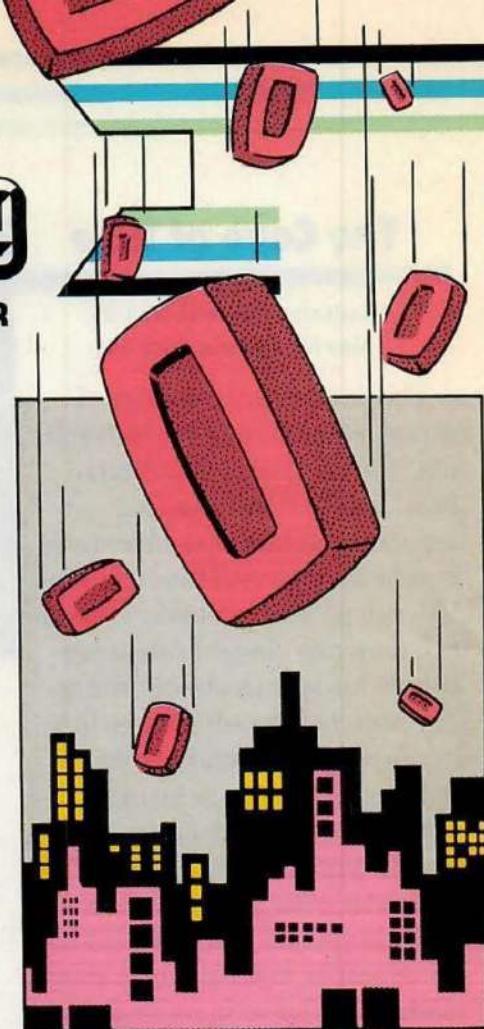
Smile!!

IBM PCJr and PC
with color graphics card

Here's a sample of computer animation that's sure to make you smile. Just press the space bar and this computer camera will produce a snapshot in a matter of seconds. Shutterbug **Glen Mazza**, 14, of Annandale, Virginia developed this program for us. So type it in and say, "Cheese!"

```
10 CLS:SCREEN 1:KEY OFF
20 LINE(40,70)-(80-70),1
30 LINE -(80,35)
40 LINE -(40,35),1
50 LINE -(40,70),1
60 LINE (50,60)-(70,60),2
70 LINE -(70,45),2
80 LINE -(50,45),2
```

```
90 LINE -(50,60),2
100 CIRCLE (60,53),5
110 LINE(60,70)-(36,110)
120 LINE (60,70)-(84-110)
130 LOCATE 6,20
140 PRINT "SMILE!"
150 LOCATE 8,14
160 PRINT "PRESS SPACE BAR"
170 A$=INKEY$: IF A$<>"" THEN
170
180 PAINT (61,53)
190 FOR I = 1 TO 300:NEXT I
200 SOUND 1810,30: PAINT (61,53),0
210 CIRCLE (60,53),5
220 FOR I = 1 TO 1950:NEXT I
230 LINE (40,38)-(11,38)
240 LINE -(11,68): LINE-(40,68)
250 FOR I = 1 TO 1000: NEXT I
260 LINE (19,57)-(21,60)
270 LINE -(30,60): LINE-(32,57)
280 FOR I = 1 TO 1800: NEXT I
290 CIRCLE (26,54),11,2
300 FOR I = 1 TO 1800: NEXT I
310 LINE (22,49)-(23,49)
320 LINE (28,49)-(29,49)
330 LINE (25,53)-(25,53)
340 LOCATE 14,1
```

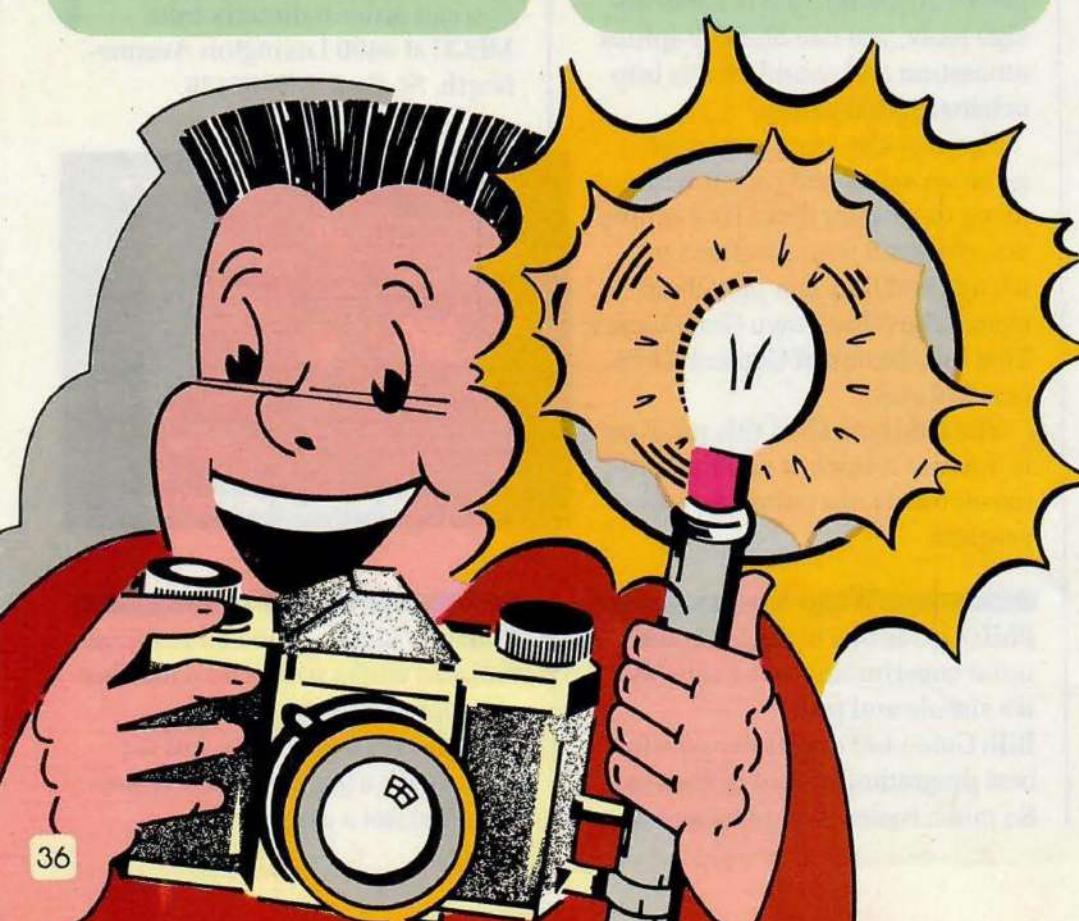


Dropping Blocks

Atari 800, 400, 800XL, 400 XL

This program is a construction set. Use a joystick to position the arrow along the bottom of the screen. Then press the fire button and watch building blocks drop from above. "Dropping Blocks" was dropped on us by **David Bailey**, 15, of Glendora, California.

NOTE: Where the program reads 40 spaces in line 20, press the space bar 40 times.



```
10 DIM S$(40):GRAPHICS 3
20 S$ = "40 SPACES"
30 POKE 752,1:POKE 82,0
40 S=STICK (0)
50 IF PEEK (53279)=6 THEN 20
60 IF S=11 THEN X=X-1
70 IF S=7 THEN X=X+1
80 IF X<1 THEN X=39
90 IF X>39 THEN X=1
100 IF X=Z THEN 130
110 Z=X
120 PRINT CHR$(125);S$(1,X);
```

```

130 PRINT " "
140 IF STRIG(0) = 0 AND
    STICK(0) = 15 THEN 150
150 GOTO 30
160 IF X = 39 THEN 30
170 FOR Y = 1 TO 19
180 LOCATE X,Y,C1
190 LOCATE X,Y,C2
200 IF C1 < > 0 OR C2 < > 0 THEN 250
210 COLOR 0:PLOT X,Y-1
220 COLOR 1:PLOT X,Y
230 NEXT Y
240 SOUND 0,100,4,15
250 SOUND 1,50,8,10
260 FOR T = 1 TO 3:NEXT T
270 SOUND 0,0,0,:SOUND 1,0,0,0
280 GOTO 30

```

A Place In the Sum

Apple, Commodore 64

The object of this game is simple. The computer gives you six digits and you must create the highest possible number. The catch is, the computer only gives you one digit at a time.

You decide where to place each digit by typing in a number from 1 to 6. For example, if the computer gives you a 9, and you want to put it in the third place from the left, you type 3 and press RETURN.

Once you get the hang of it, see if you can write a version of this game for two players.

Apple

```

10 DIM N$(13), H$(13)
20 FOR P = 1 TO 12 STEP 2
30 N$(P) = "_"
40 N$(P + 1) = " "
50 H$(P) = "0"
60 NEXT P
70 X = 0
80 HOME
90 PRINT "TRY TO MAKE THE
LARGEST POSSIBLE NUMBER"
100 GOSUB 340
110 I = INT (RND (1) * 10)
120 VTAB 9: HTAB 2
130 PRINT "WHERE WILL YOU
PLACE THIS DIGIT? ";I
140 INPUT P
150 IF P < 1 OR P > 6 THEN 120
160 IF N$(P * 2 - 1) < > " " THEN 120
170 N$(P * 2 - 1) = STR$(I)
180 X = X + 1: IF X = 6 THEN 200
190 GOTO 80
200 HOME : GOSUB 340
210 VTAB 10: HTAB 1
220 PRINT "THE HIGHEST
POSSIBLE NUMBER WAS "
230 FOR P = 1 TO 11 STEP 2
240 FOR J = 1 TO 11 STEP 2
250 IF N$(P) < H$(J) THEN 280
260 W$ = H$(J):H$(J) = N$(P)
270 N$(P) = W$
280 NEXT J: NEXT P
290 FOR J = 1 TO 12: PRINT H$(J) ;;
NEXT J
300 PRINT : PRINT
310 INPUT "PLAY AGAIN? Y/N"; A$
320 IF A$ = "Y" THEN 20
330 END
340 PRINT : PRINT
350 PRINT "YOUR NUMBER"
360 PRINT
370 FOR P = 1 TO 12
380 PRINT N$(P);: NEXT P
390 RETURN

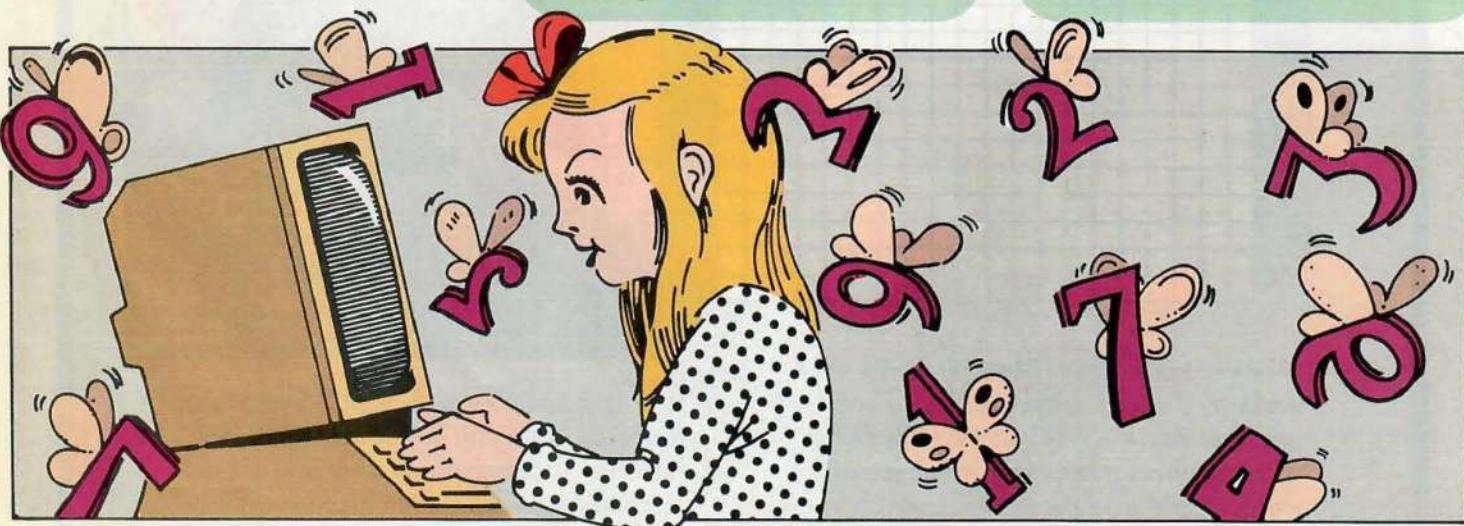
```

Commodore

```

10 DIM H$(13), N$(13)
20 FOR P = 1 TO 11 STEP 2
30 N$(P) = " "
35 N$(P + 1) = " "
40 H$(P) = "0"
50 NEXT P
60 X = 0
70 PRINT CHR$(147)
80 PRINT "TRY TO MAKE THE
LARGEST POSSIBLE NUMBER"
90 GOSUB 320
100 I = INT (RND (1) * 10)
110 PRINT "WHERE WILL YOU
PLACE THIS DIGIT? ";I
120 PRINT: INPUT P
125 IF P < 1 OR P > 6 THEN 120
130 IF N$(P * 2 - 1) < > " " THEN 120
140 N$(P * 2 - 1) = STR$(I)
150 X = X + 1: IF X = 6 THEN 170
160 GOTO 70
170 PRINT CHR$(147)
180 GOSUB 320
190 PRINT: PRINT "THE HIGHEST
POSSIBLE NUMBER WAS "
200 FOR P = 1 TO 11 STEP 2
210 FOR J = 1 TO 11 STEP 2
220 IF N$(P) > H$(J) THEN 250
230 W$ = H$(J):H$(J) = N$(P)
240 N$(P) = W$
250 NEXT J: NEXT P
260 FOR J = 11 TO 1 STEP -2
270 PRINT H$(J);:NEXT J
280 PRINT : PRINT
290 INPUT "PLAY AGAIN? Y/N"; A$
300 IF A$ = "Y" THEN 20
310 END
320 PRINT : PRINT
330 PRINT "YOUR NUMBER"
340 PRINT
350 FOR P = 1 TO 12
360 PRINT N$(P);: NEXT P
370 RETURN

```



PIXEL PUZZLER

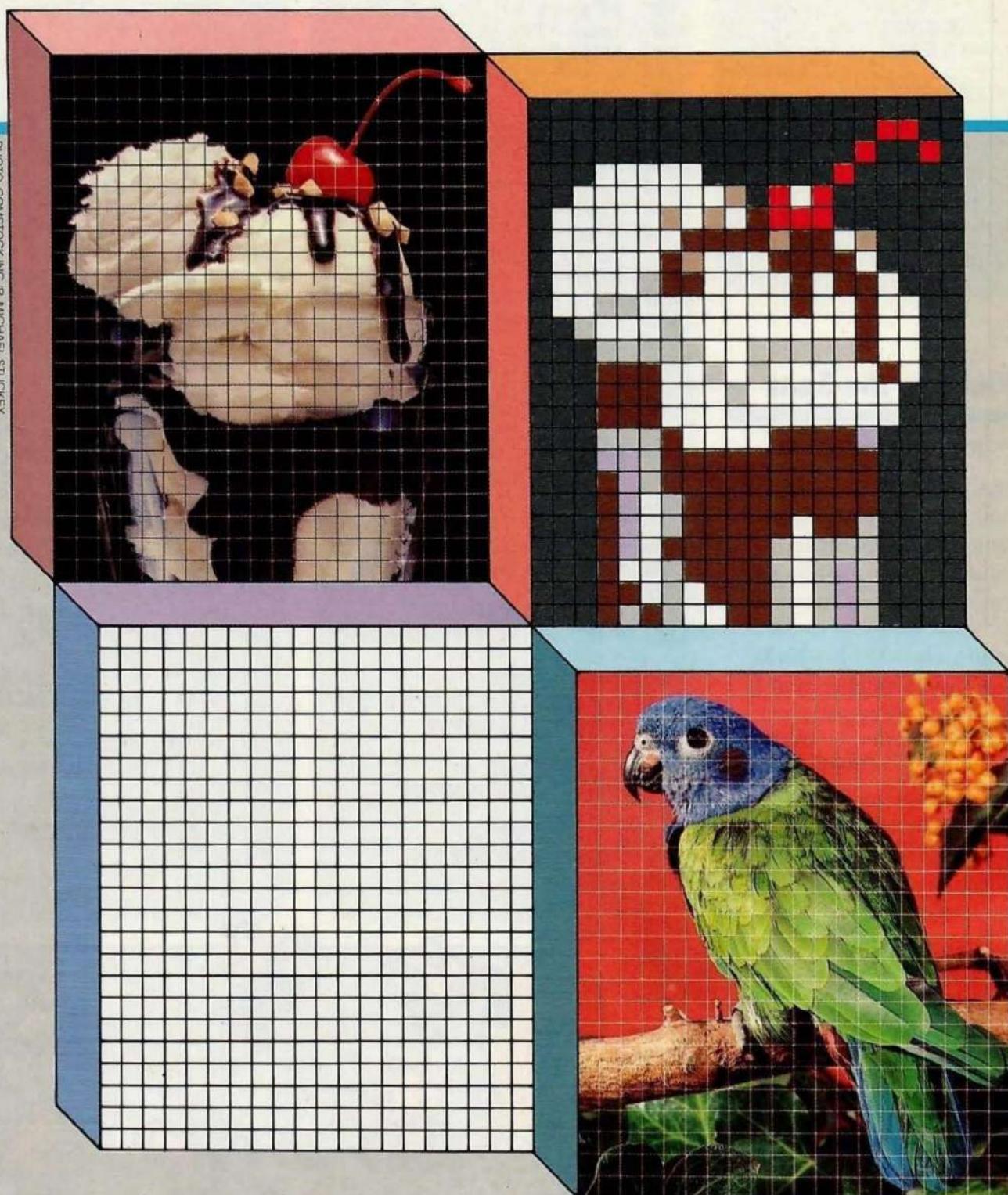


PHOTO: COMSTOCK INC./R. MICHAEL STUCKEY

PHOTO: ANIMALS ANIMALS © JOHN CHELLMAN

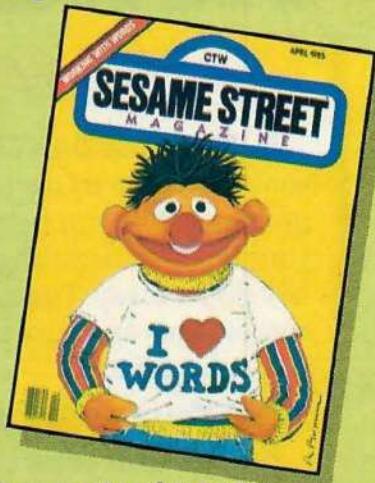
How do computers draw pictures? By breaking them up into little dots of color called *pixels*. We've done the same thing with the photograph of the sundae. First we put a grid over the photo. Then we drew our pixelized sundae in the grid next to

it. (For the best view, look at it from across the room.) Can you do the same thing with the bird? Remember, you can only put one color in each square. You decide which color is best. Dot's the spirit!

LEARNING IS FUN ...

Sesame Street Magazine

Big Bird and his delightful friends bring dozens of playful surprises, ten terrific times a year. (It's the entertaining education that Sesame Street does best!) Puzzles, cut-outs, games, A-B-C's, 1-2-3's...there's all the magic of the TV super-series in every colorful issue.



1 year (10 issues) for only \$10.95



The Electric Company Magazine

It's amusing, playful, absorbing, and educational for beginning and young readers ages 6 to 10. Enjoy ten colorful issues filled with puzzles, games, cut-outs, stories, jokes...and sunny smiles.



1 year (10 issues) for only \$10.95

3-2-1 Contact

An entertaining, informative adventure in science and technology for 8 to 14-year-olds. Each of CONTACT's ten big issues is packed with puzzles, projects, experiments, and colorful feature stories. PLUS a new ENTER computer section with programming, news and reviews. A fun, involving way to learn!



1 year (10 issues) for only \$11.95

If the order card is missing, please send your order to:
Children's Television Workshop
One Lincoln Plaza
New York, NY 10023

Rehash Your Trash

In "Tons and Tons of Trash," you read how some cities are trying to solve their garbage problems. You can help the trash situation in your town by recycling some of what you usually throw away. The easiest items to recycle are bottles, cans and paper. You can even earn a bit of money doing it.

What You Can Recycle

Bottles and Jars: Glass can be melted down to make new glass. Make sure any bottles you want to recycle are empty and clean. Remove metal rings, labels and caps. Then sort them by color—clear, green, brown and so on.

Metal: Cans may be melted down and reused, too. But not all cans are made of the same metal. You may have to sort them first.

The most common can metals are aluminum and steel. Use a magnet to sort your cans. The magnet will stick to steel cans but not to aluminum ones. For cans which are a mixture of both, the magnet will stick to the steel sides but not to the aluminum tops and bottoms.

Paper: Newspaper is your best bet, but check with your recycling center to see what other kinds they might take. Just stack the paper in piles one foot (.3 m) high and tie it into bundles with string.

How to Get Started

Before you start collecting, you need to find a place to take your stuff. If you don't already know of a recycling center, here are some places you might try for information:

1. The yellow pages of your phonebook under recycling.
2. The local library or city hall.
3. A nearby college or university.
4. Factories that use glass, paper or metal.
5. Local junkyards.
6. Your state department of environmental protection or the federal Environmental Protection Agency (EPA).

Each recycling center has its own rules about what you can bring, how you should prepare it and how much they will pay you for your stuff. Be sure to get all the facts before you start.

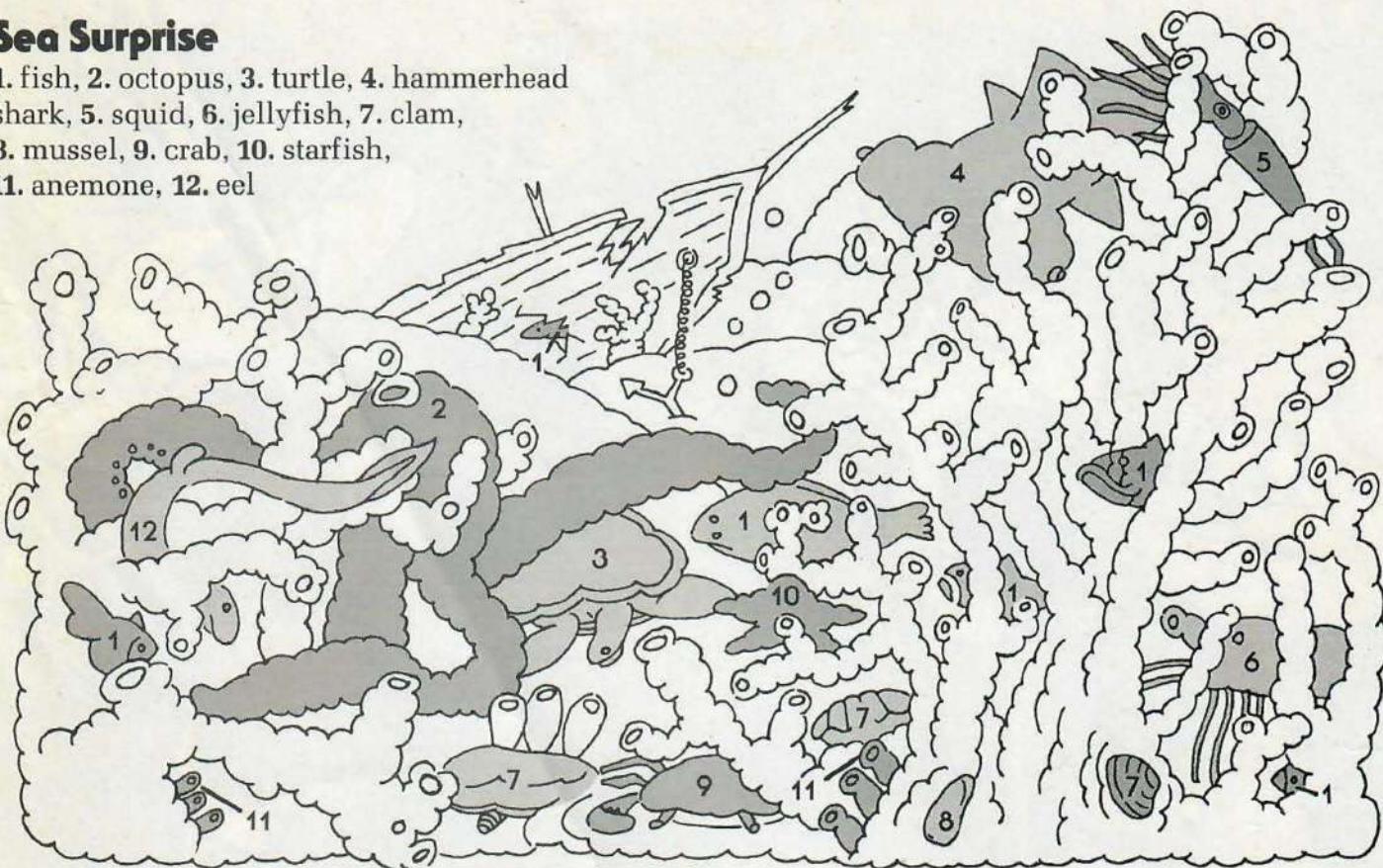


ILLUSTRATION © N. JO SMITH

=Did It!=

Sea Surprise

1. fish, 2. octopus, 3. turtle, 4. hammerhead shark, 5. squid, 6. jellyfish, 7. clam, 8. mussel, 9. crab, 10. starfish, 11. anemone, 12. eel



Next Month!

Here's a quick look at what's coming your way next month in 3-2-1 CONTACT.

Summer Vacation Issue

Have a whale of a good time as you go watching for whales off the New England coast.

Weird Museums

If you think you've seen it all, wait until you read CONTACT's list of strange museums.

Lady Liberty's Super Day

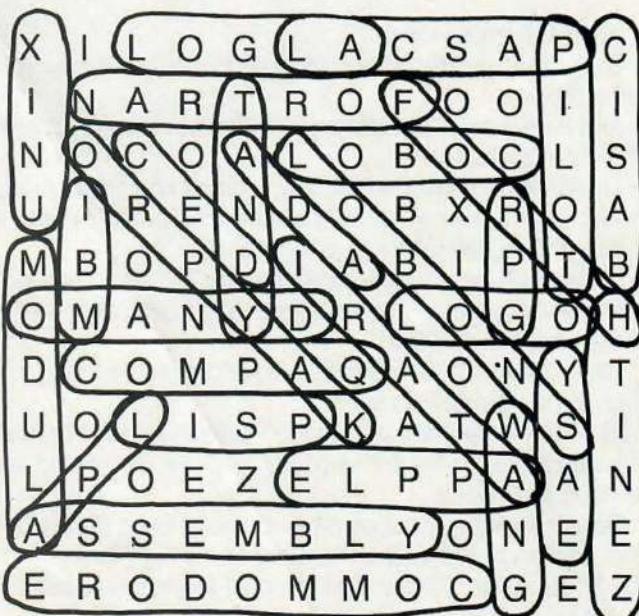
Big doings are planned for the Statue of Liberty's 100th birthday—read all about it!

Plus The Bloodhound Gang, Factoids, ENTER Computer Section and much, much more.

Mystery Code

Answer: A wash-and-wear werewolf.

Word Hunt



Cool off with some of Hollywood's brightest stars.



Every Bugs Bunny & Pals™ Drink Mix is chock-full of fun 'n games.

What a delicious idea!

Enjoy a super-tasty drink with Bugs Bunny and his lovable cartoon pals.

And have a great time playing with the fun things that come with each package.

There are back panels featuring sections of a colorful road scene. Collect them all to complete the road and then create cartoons using the stick-ons packed inside.

Other packages change into different miniature theatres with their own special finger puppets. You'll be putting on terrific shows in no time!

There are lots of other great prizes and games coming soon. Be sure to look for them.

Besides the package pleasures, there's the thrill of having your own Bugs Bunny & Pals poster. Supplies are limited, so we hope you'll hurry.

Here comes the delicious part—drinking Bugs Bunny™ Tropical Punch. Daffy Duck™ Cherry. Porky Pig™ Berry Punch. Sylvester™ Grape. And Tweety™ Lemonade flavor.

Now don't just try one. Because, as Tweety says, "You'll - wuv 'em all!"

New from Borden



"I WANT YOU" BUGS BUNNY POSTER

Here's your chance to enlist Bugs Bunny in decorating your room with this 16" x 22" 4-color Poster. To get your copy, mail one proof-of-purchase seal (UPC bars) from any Bugs Bunny & Pals 8-quart package and \$1.00 for handling, postage and sales tax to:

Bugs Bunny Poster
P.O. Box 7734
Clinton, IA 52736

Family Name _____ Child _____

Address _____

City _____ State _____ Zip _____

Offer good only in Continental U.S.A. while supplies last or until 10/31/86. Limit one per household. Allow 6 weeks for delivery. Void where restricted.